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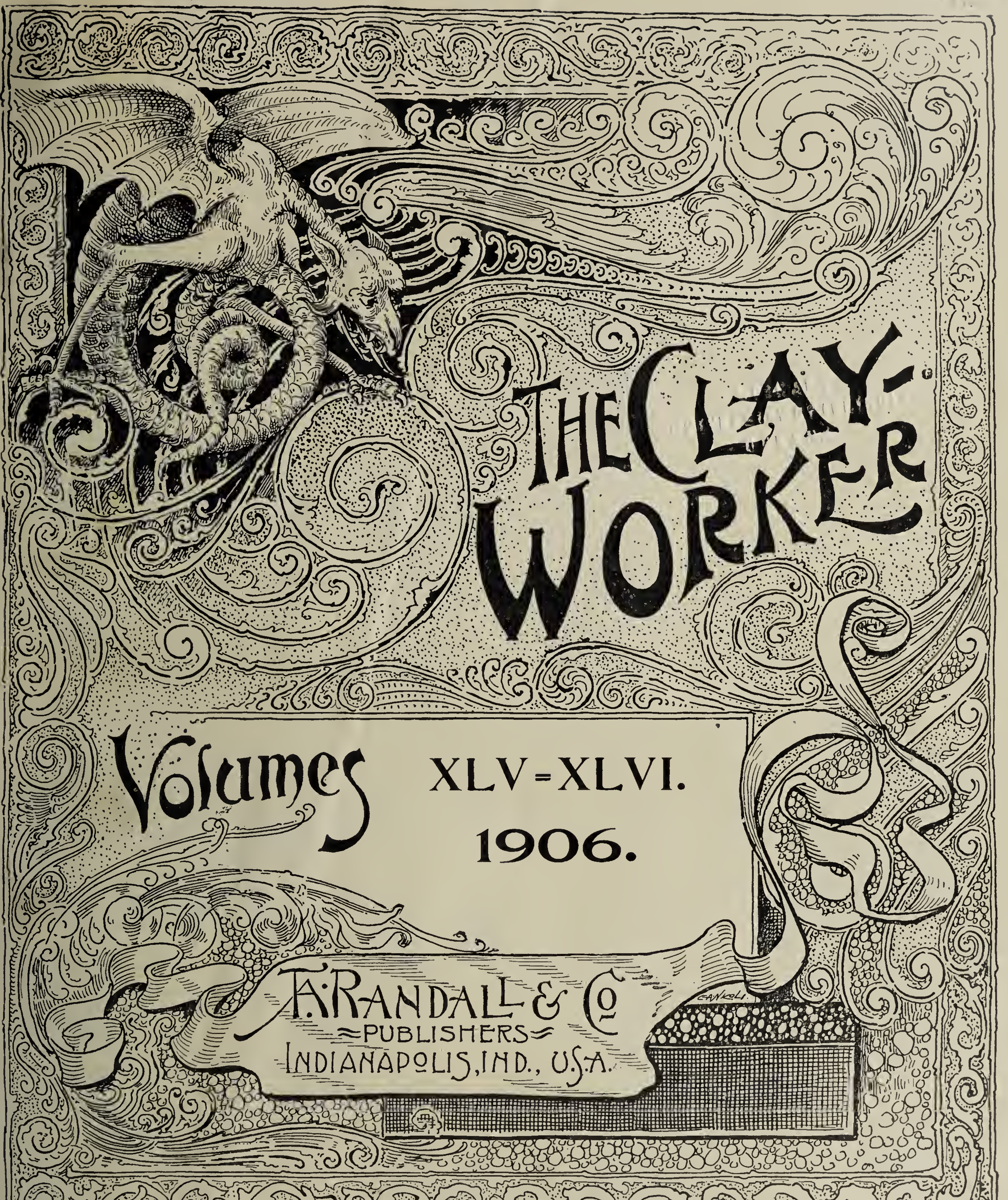

THE CLAY-WORKER

Volumes XLV-XLVI.

1906.

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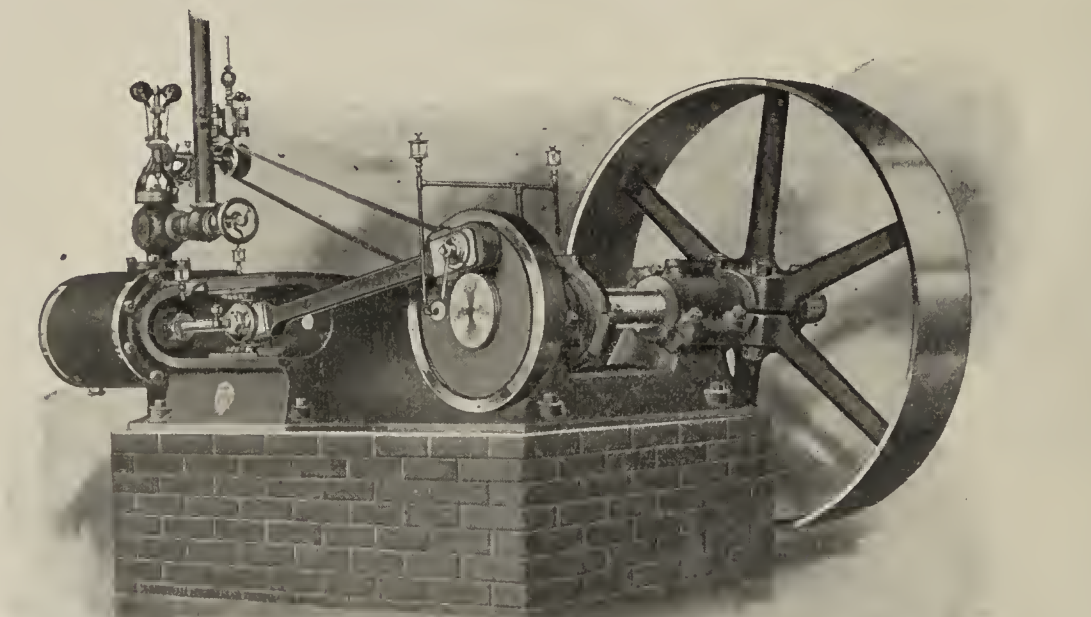

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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol. XLV. INDIANAPOLIS, IND., JANUARY, 1906. No. 1.

Written for THE CLAY-WORKER.

PHILADELPHIA OLD AND NEW, NO. 2.

A Glimpse of the Third City of the Nation—Her Great Public Buildings, Commercial Structures and Places of Amusement.

Matter of Special Interest to Brickmakers Who Will Meet There in National Convention Feb. 5, 1906.

IN LAST month's issue of THE CLAY-WORKER, the readers were told something of the historical points of interest in and about the Convention City. Now I will tell them something of Philadelphia of to-day, a great city rivaling in wealth, population and industrial life, the greatest cities in the world. Philadelphia possesses so many attractions that I can only mention a few of the most important, and leave the balance for the personal exploration of the delegates convention week, and each one, whatever his bent, will find something worth his while to investigate during his stay, whether it be an industrial establishment, an art museum, an educational institution, or just a place of amusement. And the ladies who delight to shop, will find here the finest retail establishments under the sun. The great Wannamaker store is only one of the dozens that cater to every want, real or imaginary, and I predict that regardless of weather conditions, the ladies who attend, will enjoy every hour of their stay in the Convention City. I may add here that the Continental Hotel is in the heart of the shopping district, Chestnut street, on which it faces, alone offers shopping facilities that rival those of New York, London or Paris.

The City Building, Philadelphia,
On the Dome of Which is the
Statue of William Penn.

The Mammoth Pennsylvania Station,
Built of Red Brick and Terra Cotta.

In enumerating the points of interest, one naturally begins with the City Hall, for it is at once the largest and most conspicuous structure in Philadelphia. It occupies four and one-half acres in the very center of the city, and the statue of William Penn upon its towering dome looks down upon the tallest of our sky scrapers. The building cost more than $20,000,000. It is constructed of marble, granite and brick, many millions of the latter being used in the interior portions of the building. The lower portion of the building is in the form of a hollow square, covering the intersections of Market and Broad streets. The main structure is in theory, four stories high, but has actually eight floors, each containing a multitude of lofty rooms. The tower is 550 feet high, and excepting the Washington monument, is the tallest structure in the world. The circle of electric lamps about the head of the Penn statue is visible over thirty miles at night.

One of the largest and most interesting brick buildings in the city is the Pennsylvania Railroad depot, directly opposite the City Hall. It is a splendid example of modern Gothic architecture, eleven stories high, built of red brick and terra cotta. The main building has a frontage of 306 feet on Broad street and 212 feet on Market street. Trains enter and depart from the station over an elevated viaduct of solid brick arches, reaching nearly five squares west to the steel bridge over the Schuylkill river.

Philadelphia's Famous Masonic Temple.

Facing the City Hall from the east is the famous Masonic Temple. It is an immense structure, rising 95 feet from the pavement, with two towers, rising from the Broad street front, one of which is 250 feet high. The interior arrangement and decoration is said to be very fine. There are a large number of lodge rooms, all fitted in a most sumptuous manner, a fitting home for the most ancient fraternal organization known to moderns. Visiting masons are always welcome, I believe, and find many things of interest to them in the Temple.

The Masonic Temple, Philadelphia.

Another building of perhaps equal interest to most Masons is Lulu Temple, the home of Philadelphia Shriners. It is a quaint bit of architecture, as the acompanying illustration shows. It has a distinctly foreign appearance, the ornamentation being exceptionally rich. It is executed in buff terra cotta. The interior is equally attractive. I was told that the portly dome at the top is the home of a number of camels and their keepers. I should doubt this but for the fact that I have also been told that at all their entertainments, Shriners and their guests are served with camel's milk. The Temple is open to visitors always, so that those who are interested may investigate these matters to their own satisfaction.

One might continue indefinitely the list of public buildings, and but faintly describe them at that. However, those of lesser import must give way in this instance, and mention be made of a few only. Enumeration and description grow wearisome to the reader, so with some little consideration, we will proceed to some structures that must necessarily be mentioned in connection with the Quaker City. North Broad street from the City Hall, is a region of fine public buildings, and further north, of Philadelphia's handsome residences.

Broad street itself, is the great north and south thoroughfare, extending from the northern suburbs south, to League Island. It is 120 feet wide—paved with asphalt, and forms the "grand avenue" of the city. No railroads are permitted on it except at its outer extremities; and the only way to view its architectural beauties is either to have a vehicle or to walk. The most of its attractions are within half a mile south, and a mile or so north of the City Hall.

Continuing from Masonic Temple, one passes fine churches, the Acadamy of Fine Arts, built in 1876, and containing fine specimens of paintings and sculpture. The Acadamy is of the Venetian style, having above its entrance a mutilated statue of the Goddess, Ceres, exhumed at Megara, Greece, many years ago.

A Few of Many Sky Scrapers.

Opposite to this building stands the Odd Fellows Temple, one of the best structures owned by that organization in this country, and a good example of Italian Renaissance.

An Entrance to Fairmount Park.

At Broad and Spring Garden streets we find the famous "Baldwin Locomotive Works," giving forth deafening sounds from the multitude of steam and hand hammers. At any time of the day or night can be found interested spectators of this condensed labor, turning out iron horses, which enable humanity to see the sights of the world.

Let us turn now on Broad street, south of Chestnut. The corner of South Penn square, immediately opposite City Hall, is the site of the thirteen-story Romanesque Betz building, a peculiar feature of the ornamentation is a bronze cornice above the second story windows, in which are the heads of all the Presidents of the United States, from Washington to Harrison—the terms of each being indicated in the frieze.

Three of the four corners of Chestnut and Broad streets are occupied by tall and modern office buildings—Girard Life and Trust Company on one corner, and facing it stands the lofty and beautiful structure of the Real Estate Trust Co. and on the southwest corner is a worthy rival, that of the Land Title Trust Company's building.

Crossing Walnut street, the Bellevue-Stratford Hotel shines forth in all the majesty of its beauty, a rival in beauty to the Waldorf Astoria, of New York, and under the same management as that world-famous hotel.

Following the line south, one passes the Art Club Acadamy of Music, and Horticultural Hall. On the east side of the street are the Hotel Walton, Broad Street Theatre and other hotels and apartment houses.

It has been laughingly said of Philadelphia that those of newly acquired riches have their residences on N. Broad Street, while the old-time wealthy families congregated on West Walnut street and vicinity. In Philadelphia lingo, this is explained by "above" and "below" the rails, meaning above or below Market street.

At any rate, both above and below the rails are beautiful residences, but those with immense gardens and shade are out in the suburbs. The suburbs of Philadelphia are not excelled even by those of Boston.

Germantown, the old historical suburb, is the most famous of all, and with its sub-sections, Mount Airy and Chestnut Hill, forms a history in itself. Its old Colonial architecture, historical and palatial residences can be counted by the hundreds.

The Convention City's Beautiful Parks and Drives.

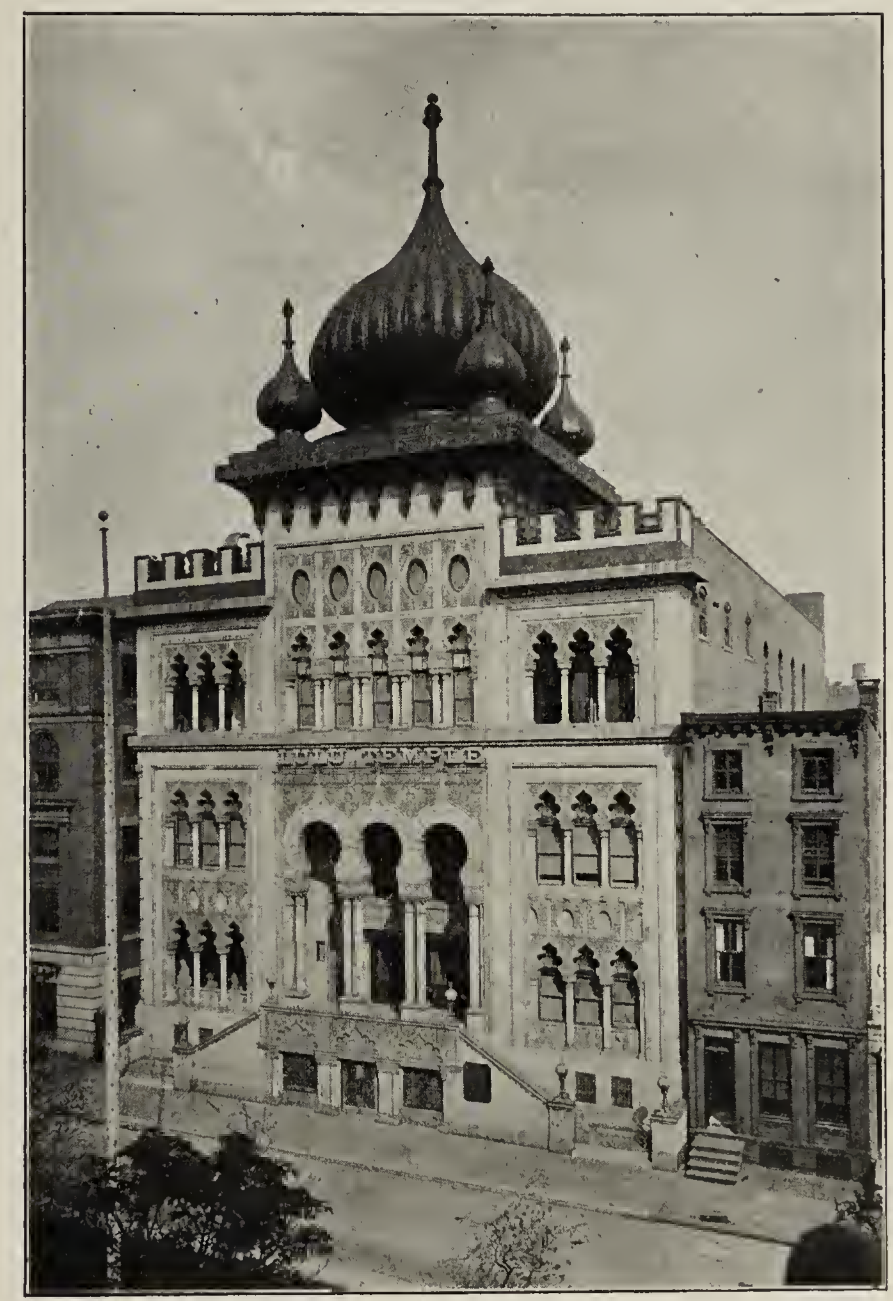
Philadelphia has many beautiful parks, such as other cities possess, and two that stand pre-eminent in their beauty and line; the one, Willow Grove, twenty-three miles north of City Hall on York Road, the ancient turnpike which continues North Broad street into the country. As the City is left behind, the old pike becomes more rural and inviting; grand trees shade the ancient highway, which winds through dells and over hills that give wide views over a beautiful rolling country. Fine country seats border the road, dotted here and there with quaint stone houses. Then comes Logan Station, Oak Lane and Ashbourne, Chelton Hills, Jenkintown; the latter historically interesting village, near where Washington's repulsed army made a fortified stand after the disastrous battle of Germantown. After passing the rural Huntington, Willow Grove appears in the distance upon an eminence separating the Wissahickon from Pennypack Creek.

Catholic Fountain, Fairmount Park.

Willow Grove itself is like a veritable "fairy land," with its beautiful electric fountain, and its music stand, where seats are provided for 30,000 persons, to enjoy the varied and artistic musical creations. All is ablaze with electricity, and the best people of the city crowd the park and enjoy the amusement in a quiet and elegant manner.

In contra-distinction to this and on a magnificient scale is our Natural Fairmount park. This broad pleasure ground contains over 3,000 acres; its southern end is at Callowhill Street Bridge. From here it extends north on both sides of the Schuylkill river in varying widths to the Wissahickon creek. Branching off from here, it follows the Wissahickon with its embracing hills, to the north side of Chestnut Hill. About one mile above the mouth of the Wissahickon, one branch follows the right and the line of the Monoshone creek, and enters a short distance into Germantown. This park, with its tremendous area, is divided into many sub-parks, if one may so term them, Lemon Hill, East Park, Rockland, etc.

West Park, the old Centennial grounds, contains Horticultural Hall, with its magnificent tree-ferns and tropical plants. The Conservatory measures 230 x 80 feet, and is 55 feet high. In the fore-ground and facing the entrance, is a beautiful sunken garden that delights the eye in the summer time by its vari-colored blooms. George's Hill is an eminence 210 feet in height, north of these grounds, and is a favorite resort for picnic parties and carriage drivers. Its summit bears the Belmont reservoir (40,000,000 gallons) and at its foot is the allegorical fountain, erected in 1876 by the Catholic Total Abstinence Society. Memorial Hall, illustrated in this issue, was built in 1876 by the city, at a cost of $1,500,000, as a permanent memento of the Centennial, and is now partly occupied by the school and museum of Industrial Art.



Lulu Temple, Order of the Mystic Shrine.

Wissahickon, the famous drive, is a revelry of wild and natural beauties—indescribable. For the first mile above the outlet of the Wissahickon creek, the path winds about towering rocks and along the verge of steep, but low precipices; then the valley broadens out and a series of fine picnic grounds disclose themselves to view. This road, with its mysterious "sneaking Indian," "Devil's Pool" and "Lovers' Leap" and caves, is redolent of romance and legend. It is kept, as nearly as possible, in its original wild state, and it is estimated that more than 200,000 trees clothe its steep and picturesque sides.

Returning once more to the city and its heart of turmoil and labor, we view the University grounds, at Walnut street

107204

and Baltimore avenue. Entering the main gate, confronting one is the Gothic Front and tower of College Hall. From this, as he wanders over the grounds, one is delighted at every turn by the handsome architecture that opens itself to view.

The Pennsylvania University.

The University was founded in 1740, as a charitable school, by the efforts of a body of men, with Benjamin Franklin as the leading spirit. The plans were characterized by a remarkable liberality in breaking away from traditions of classical education toward modern languages and non-sectarian, practical instruction.

It prospered, soon purchased and occupied the great building that popular enthusiasm had erected for the congregation of the reformer, Whitefield, and its broad course of study became the model for American colleges. Its present title was assumed in 1791.

It has graduated about 17,500 students, a number exceeded only by Harvard It possesses medical school and law school, both of which are the oldest of their kinds in the United States.

The Towne School has been reorganized and developed into technical and scientific departments. There are about thirty buildings thus far and they increase gradually.

We must leave this pleasant contemplation and pass on to other buildings of import and benefit to mankind.

Girard College is one of the landmarks of a Philadelphian charitable spirit. Stephen Girard, a merchant who died in Philadelphia, 1769, at the time of his death was one of the richest men in the country. By his will he left $500,000 to Philadelphia for improvement of streets and buildings; $300,000 to the State for the improvement of canals; and the rest of his property for the support and education of poor, white, male orphans, between the ages of six and ten years when admitted to the institution; giving the preference first to those born within the bounds of the city of Philadelphia, secondly, to those born in Pennsylvania; thirdly, to these born in New York; and lastly to these born in New Orleans. The corner stone of Girard College was laid July 4th, 1833. Since then the growth of the institution has been so great that numerous other buildings have been erected by the trustees, until now, the place resembles a small suburban town of handsome buildings and residences. The original college is an impressing structure of a rich Corinthian style of architecture. It is one hundred and eleven feet wide, one hundred and sixty-nine feet long, surrounded by a range of fluted columns. The total height of the building is ninety-seven feet, arched throughout with brick and stone, and roofed with marble tiles. The weight of the roof alone is one thousand tons. In the south vestibule is a large sarcophagus in which repose the ashes of Stephen Girard and above it is a statue of the founder by Gevelot, said to have been a wonderful likeness both in expression and pose.

The Drexel Institute, Chestnut Street, corner Thirty-second, is one of the best samples of terra cotta work that Philadelphia possesses.

A richly ornamented portal on Chestnut street, leads into a spacious hall, the ceiling of which is supported by pillars of red Georgian Marble. Beyond this is a central court sixty-five feet square, and the entire height of the building, the ceiling being a skylight of stained glass whence stairways lead to the upper floors and to the basement.

At the rear of the court, and having an entrance of its own on Thirty-second street, is the auditorium, with a seating capacity of 1,500 persons, and an organ of great size.

Cramp's Ship Yard, Day of Launching of "Vesuvius" and "Yorktown."

Where Great Ships are Built.

With a bare mention of other interesting matters, we shall soon close the chapter of new Philapelphia. Let us pause to contemplate Cramp's ship yards. To do so, one should take a steamboat-ride first, for the view from the river of this place of universal interest, is wonderful, on account of the well known "Ocean Greyhounds" and warships that are constructed here.

The firm was founded in 1830, and during the three quarters of a century, since then, over three hundred vessels have been built in its yards, including some of those best known to the world.

From here, it is a natural condition of things that we progress to "League Island Navy Yard," moved in 1876 to its present situation about seven miles from City Hall. The League Island is about two miles long and contains nearly one thousand acres. A broad avenue extends from the entrance to the wharves and upon each side are arranged the buildings of the yard, officers' quarters, store house, machine shops, etc. Here one may see cannon captured from British ships in 1812; Parrot guns that saw service in the Civil War; and pyramids of old style shot and shell. A feature of the yard is the immense fresh water basin in which many vessels may lie at once without their bottoms becoming fouled by sea-growth, or other injury befalling them. The Monitors remaining from the Civil War, which had been anchored here for thirty years, were in good order when summoned for harbor defense in the recent war with Spain.

Already, facilities are at hand for building war ships there, and these facilities will be much enlarged and a vast dry dock will be built The yard is a highly interesting place to visit and one feels more than repaid for the journey.

The United States Mint.

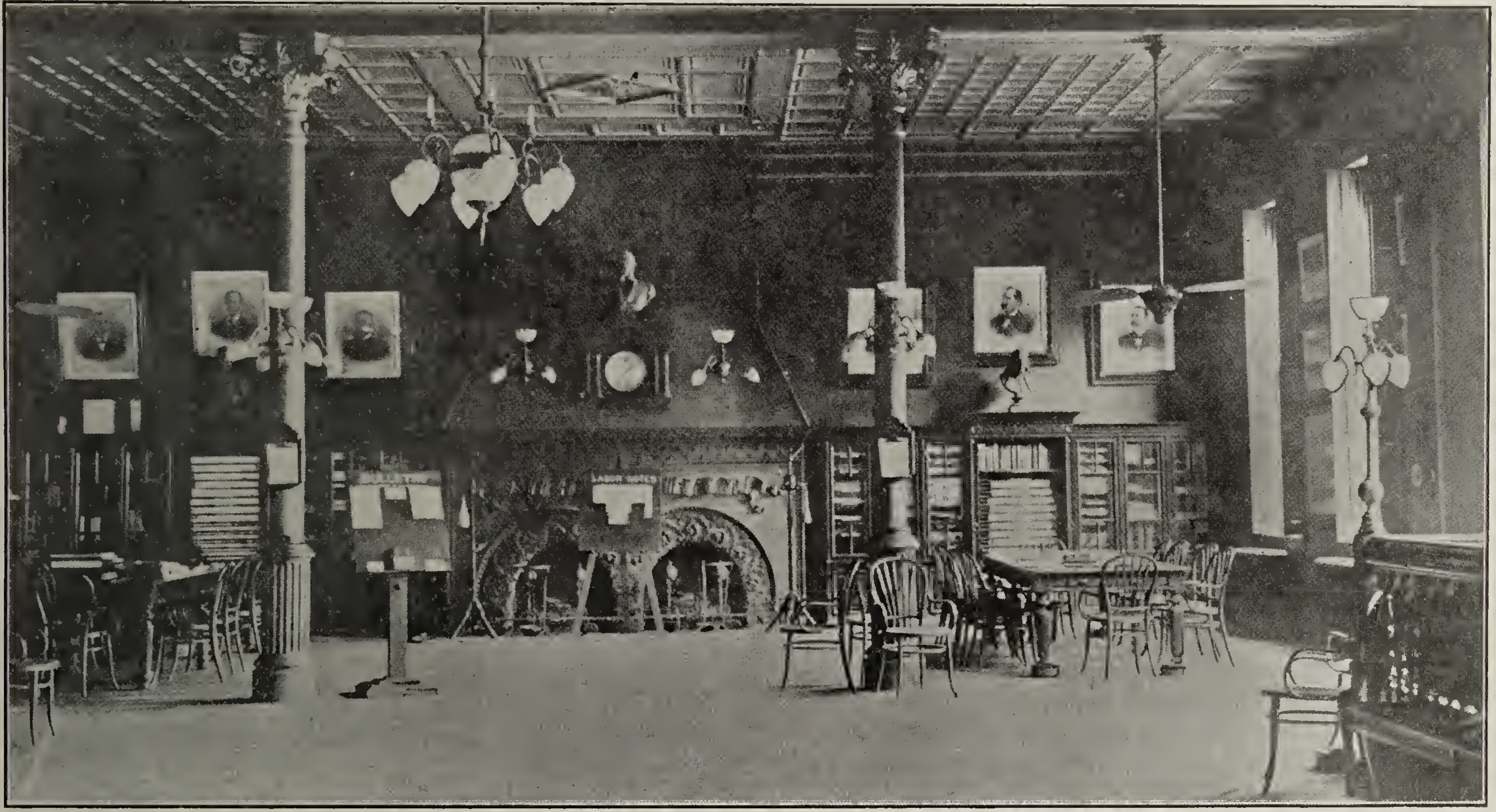
One of the most interesting places in the city, and one that is visited by hundreds of sight-seers every day, is the new United States Mint. It is an immense and beautiful structure on Spring Garden street, and is undoubtedly one of the best equipped establishments for the coinage of money in the world. Visitors are shown through the institution by government officials or guides whose business it is to explain the modus operandi of making money. Each feature of the process of turning bullion into the coin of the realm may be viewed, and a most interesting process it is.

Philadelphia was the first city in the Union to establish a Zoological Garden. The present Zoo, which was started in 1859, represents an investment of several hundreds of thousands of dollars. It is located in Fairmount Park and affords a rare opportunity for the study of animal life. Even in the winter time it is a favorite place of amusement for large numbers of visitors.

Philadelphia Theaters.

There are about a score of play houses, ranging from the finest up-to-date fire-proof theatres down to the ten and twenty-cent variety, and at all seasons of the year one may find almost any manner of play or drama, concert or opera, lecture or vaudeville that the individual taste may crave. The best of the theaters are within a short walk of the Continental Hotel. The latter is located at the corner of Chestnut and Ninth streets, diagonally across from the post office. It is a commodious, rather home-like hostelry with a capacity for close to one thousand guests, but should the convention crowd prove too much for it, visitors will find several excellent hotels within easy walking distance. For instance, Green's, a noted stag hotel, is but a short square distant, being located at the corner of Eighth and Chestnut.

The Builders' Exchange of Philadelphia is headquarters for the various trade associations connected with the building lines. The Exchange owns its own building, a three-story brick structure, at 18 to 24 South Seventh St. The first floor is devoted chiefly to exhibits of building materials. It is open to the public, and many of the exhibits are both attractive and instructive. The upper floors are devoted to reception and committee rooms and office purposes. On the upper floor there is a dining room and billiard hall, and between the hours of twelve and two, the builders and contractors of the city meet here both for business and social purposes. Out of town visitors are always welcomed cordially by Secretary Harkness, who is a prince of good fellows, and has served the Exchange faithfully and well for many years. The brickmakers of Philadelphia have always been well represented on the Exchange's executive staff. Murrell Dobbins, William Conway and other well-known members of the N. B. M. A. have been honored by the presidency, which position at present is filled by Mr. Thomas F. Armstrong, of the Conkling-Armstrong Terra Cotta Company.



Main Reception Room, Builders' Exchange, Philadelphia.

It was in the committee rooms of the Builders' Exchange that the local manufacturers formed and perfected their plans for the coming National Convention. Mr. John R. Huhn, the chairman of the local committee, is a daily attendant at the Exchange when not at the State Capital, where he is now "serving a term" in the Legislature. The courtesies of the Builders' Exchange will be extended to visiting clayworkers Convention week, during which time the motto of the Exchange will be "If you don't see what you want, ask for it."

M. E. Lockington.

Written for The Clay-Worker.

PHILADELPHIA BUILDING LAWS GOVERNING USE OF CONCRETE.

PHILADELPHIA, incidently the next meeting place of the N. B. M. A., and home of expert technical information and authority on cement and cement products, has passed some building laws governing concrete block construction that are making some of the enthusiasts squirm. The new Philadelphia law goes into details quite extensively in giving rules and regulations covering the manufacture and use of hollow concrete building blocks in that city, naming several restrictions that are no doubt irksome to the cement block people, but evidently thought necessary by Philadelphia experts, because of the great element of uncertainty in cement products. The new laws will not permit the use of hollow blocks in party walls, stating that said party walls must be built solid. The cement used in making blocks must be Portland and capable of passing the minimum requirements as set forth in the standard specifications for cement by the American Society for testing material, and no hollow concrete building block may be used in the construction of any building in Philadelphia unless the manufacturer of said block has submitted his products to the full test required by the bureau of building inspection and placed with the bureau a certificate from a reliable testing labaratory, and he must have a fully equipped plant in operation when these tests are made. The method of testing and the requirements are set forth in detail, and if properly enforced, this law will have the effect of putting cement construction on a rational basis and shutting out the work of unreliable mushroom institutions that spring up over night through the encouragement of highly colored cement block literature. Incidentally, it will alter materially the figuring on cost of cement construction which will be a pretty good thing for the concrete business in the end, because too many false ideas of cheapness have been entertained right along, and it is time to get rid of a few of them.

RELATIVE TO THE FIRE PROOF QUALITY OF CONCRETE.

The Fireproof magazine, which is consistently and persistently doing good work in the line of prompting fireproof construction, gives in its November issue a full description of a concrete fireproof warehouse and in commenting on this editorially, says that the purpose of the magazine is not to fight concrete as such, but to point out mistaken ideas in regard to this material, and especially to object to its being made of cinders and then called fireproof. It says a fireproof building can be made of concrete as it has in this instance, and then continuing says of the building under discussion which was made eight stories:

"But its height is the practicable limit for hard concrete buildings for warehouse purposes. This fact opens another question as between hollow tile fireproofing and concrete. There is no doubt but that the reduced weight of steel and hollow tile construction in this case would have made a ten-story building equally practicable and very little more expensive than an eight-story building as erected. Moreover, we do not believe it would be any more expensive to duplicate it, as erected, with steel and hollow tile construction and a brick exterior. Semi-porus terra cotta as now made will not only go through a conflagration without cracking from unequal expansion, but without any chemical change, while concrete is affected permanently by heating and cooling, even though it remains in position after the fire."

This throws the light of some pretty good authority on the comparative cost and merits of concrete and clay products and when considered in connection with the further assertion by the same journal that clay is the superior article for fireproofing, it makes an argument in favor of clay products that is worth while keeping in mind. Commenting on tests made by the British Fire Protection Committee, London, the same paper says that though exposed to the heat during four hours which rose to 1800 degrees F. semi-porus tiles were unaffected in any way. It is pointed out that concrete would have been changed in its organic structure in such a test even though it might have remained in its place. These tests, it is said, will likely give a great impetus to the use of hollow clay tile partition blocks in England where they have not heretofore been used as extensively as they should.

Builders' Exchange, Philadelphia.

Further along F. W. Fitzpatrick, who is one of the most entertaining as well as authoritative writers on fireproofing, tells of listening to a talk that was given by an instructor in England to a class of youngsters in which he was surprised to find an old man in an old school giving vent to such real good sensible ideas, and from the ideas set forth he quotes the following:

"In weak tensible material, subject to strain, the best practice of ancients and moderns teaches us that small units are better than the large ones. Man, early in his development, built of timbers and covered considerable spans: later he began to use stone, and attempted to adapt it in the same manner, making hugh lintels, covering openings and ceilings. Accidents were frequent, fissures and veins in the stone developed weaknesses not apparent at first, and little by little, man got into the idea of cutting stones into key-shape and building arches of them with which he could span far greater spaces. That is, virtually, too, what is being done to-day in the construction of fireproof floors. The best system of fireproofing known is made of segmental arches of fireproof tile, no one of which is over two feet square small units, and developing wonderful strength and resistance to the elements. In the new fad of cheap concrete construction, they have attempted to take a material that has no tensile strength and make a monolithic lintel of it. Realizing its inherent weakness, they have added tensile members, steel bars, wires, etc., whose expansion and contraction are not at all similar to those of the inert mass, resulting in trouble, for the two do not always knit, and as a consequence, we frequently see in the daily papers reports of buildings that have collapsed. It is an attractive problem for speculative engineers to play with, but not a system of construction that should be approved or indulged in for general use."

A Section of the Exhibition Room in the Builders' Exchange.

The head of the institution is entitled to the respect of all his employes, but if he will make it a point to always deserve it he will seldom have to command it.

Written for The Clay-Worker.

BRICK PAVEMENTS IN THE EAST.

ENGLEWOOD, N. J. has told the trolley company that is asking for a franchise for extensions of its lines, that if it will pave Dean street with brick, the same way it paved Main street, in Hackensack, three or four years ago, it can have the franchise. It will cost from $75,000 to $100,000, according to rough estimates. But it would improve a street which is now a disgrace to any city, and would make it second to none in the Eastern part of New Jersey. It might be noted in passing, that there is a growing disposition on the part of the city officials to accept brick as the best paving. It requires the creating of a public sentiment in most localities, however, otherwise the officials have nothing to impel them to do the work. It might be noted, further, that it would be good policy for brick men to get busy and have something to do with the creation of this public sentiment. Otherwise, they won't get brick adopted as commonly as they would like. In numerous instances it is merely this creating of a sentiment, something which has been done with reference to other varieties of paving, but which has never been done with brick. The result is that other varieties of paving have been almost uniformly adopted and, brick has been neglected. It is time now that brick men began the agitation of the use of brick wherever paving is to be done. There is no graft in it. It is simply the process of straight, legitimate advertising.

New York has gone mad over the preserved wood paving, and is putting it down on numerous streets where it is not putting down asphalt. It is a fair substitute for brick, but does not wear like brick, nor is it as good in other ways. It has been charged that brick is slippery when wet, but it can't compare with either preserved wood or asphalt. It has been charged also, that brick is noisy, but it doesn't compare with the stone paving, which is being laid in several parts of the city. Clearly, these objections have no weight with New York officials. It is, of course, perfectly clear to everyone what sort of an argument it requires to appeal to Tammany. It ought to be understood by this time. It has been circulated widely enough and freely enough. But brick men have heretofore held themselves aloof from competing in such a losing business and certainly no one can really blame them. Still, if they could get brick accepted for certain streets so that it could wear alongside of the other sorts of paving, it would be a valuable object lesson, and might eventually lead to important business. Some of the Tammany officials have said since the election that the people ought to be allowed to have their way once in awhile. Perhaps they could be induced to grant the people a word in this matter. Brick ought to be more generally adopted in all cities, and in New York there ought to be a good deal of it laid. **Burton.**

AMERICAN BLOWER COMPANY ENLARGING THEIR PLANT.

In order to adequately care for their continually increasing business, the American Blower Company, of Detroit, is erecting a three-story addition to their plant. This particular addition is rendered necessary by the growing popularity of their type "A" enclosed, vertical, self-oiling engine, which was placed upon the market some two or three years since, meeting with immediate approval. The building will be of steel and brick construction. The first floor will be used for erecting and testing engines, a very complete new outfit being put in for the latter purpose. The power from engines under test will be absorbed by generators and air compressors. An electric crane will form part of the equipment in this department. The second floor will be used for storing engine parts and painting the completed engines, and the third floor will be utiized for storage purposes entirely.

Written for THE CLAY-WORKER.

FIREPROOF HOUSES: WHY NOT?

BY F. W. FITZPATRICK,

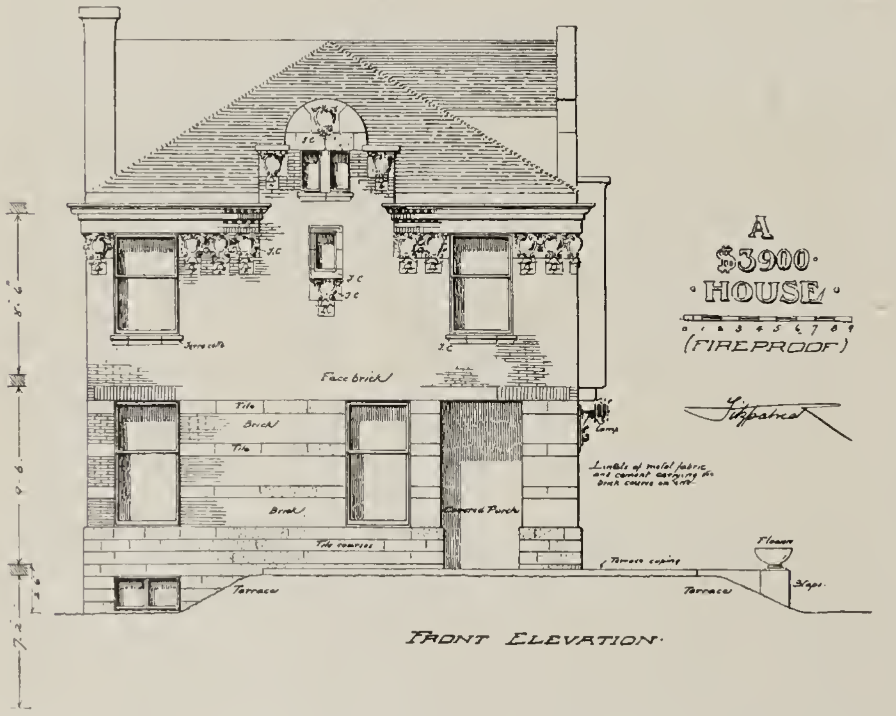
Consulting Architect and Secretary of the International Society of Building Commissioners and Inspectors,
4200 Fourteenth Street Road,
Washington, D. C.*

> ***"A wise man buildeth his home that e'en his children's children may enjoy it, and that it serveth them as it doth himself, and that the elements nor time may not prevail against it . . . . . ."***

THINKING BUSINESS men have begun to realize the importance of properly constructing their great commercial structures, their State buildings, institutions of learning and such edifices. They have seen the fallacy and folly of an imposing marble front, covering a skeleton of wood, a fire-trap that courted and often met total destruction. Indeed, fireproof buildings are becoming almost common. Think of it; in all this vast country, with its eighly millions of allegedly intelligent people and its millions on millions of buildings, there are just a few over three thousand fireproof structures, and fifteen hundred of those are to be found in New York City! And, too, the all-prevalent taste for so-called cheap building, non-fireproof construction, is costing the the country a pretty penny, something like $230,000,000, last year, of property that went up in smoke, not to mention the 7,000 lives wiped out by the same dread destroyer, fire.

As little sense as has been shown in the construction of our larger buildings, it assumes the form of stupendous ignorance when we think of how we have been and are building our homes, there where we are supposed to spend two-thirds of our lives. There are something like 15,000,000 houses in this country, perhaps nearly 16,000,000. Probably not over 200 of that entire number have been built with any idea of fire prevention and are entitled to being called "fireproof" even in its broadest sense. Most of that number are the homes of the very wealthy, and I am confident that there are not 25 fireproof houses in these United States of America that are within the means of the average man, houses of $5,000 or $6,000.

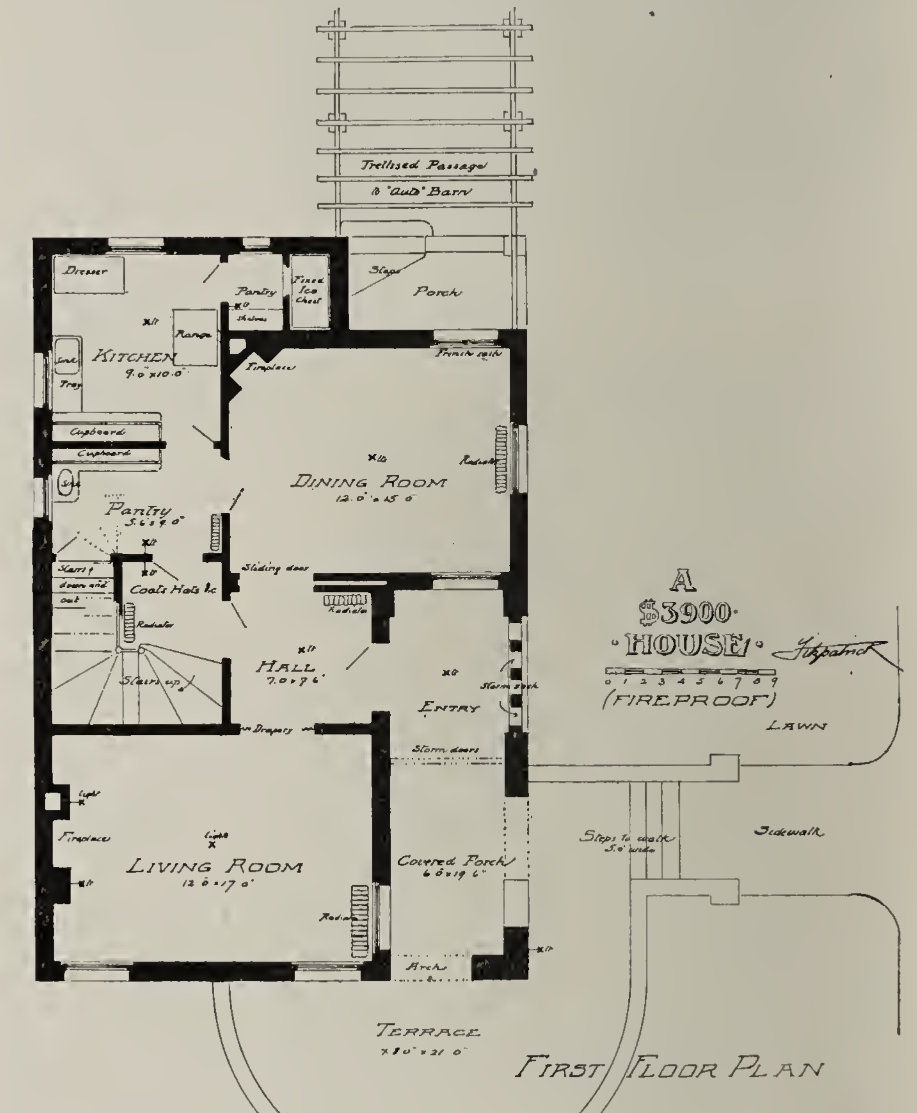
The contemplation of these figures is calculated to make one rather skeptical as to our so-called national intelligence. Still keeping last year's records before us, we find that 80,000 houses went the smoke route. That is, we have Building and Fire Department and Insurance reports vouching for that number, but Heaven alone knows how many were destroyed in out-of-the-way places,—uninsured and unreported, fires.



FRONT ELEVATION.

The Cost of Fire Protection.

Some there are casuistic enough to argue that fires are a sort of necessary evil, that our trades-people need them, that such destruction is really but an impetus to reconstruction,—a boom to business, and that the loss is, indeed, but an exchange, that the average intelligent man is recouped by the insurance companies. (?) Sophistry of the rankest kind. The loss is absolute. Smoke is all that remains, and that has not yet been turned into a useful commodity. True, the individual, as a rule, does get back at least a proportion of what he loses; something like $200,000,000 was paid back by the insurance companies last year. But, bless you, for every dollar the companies pay out, they have taken in three from the community in the form of premiums, and yet they claim there is no profit in the business.



FIRST FLOOR PLAN

Besides this absolute loss, we are spending vast sums every year in improving water supply, in maintaining splendid fire departments, foolishly striving to cure an evil that could so easily be eradicated, prevented. Had we spent, last year, not quite as much as we lost by fire, we could have made every blessed building from town-hall down to pig-sty, absolutely undamageable,—fireproof. But no. We would rather keep on building shoddily, imperiling our lives as well as our property, and buy more fire engines.

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*Working plans and specifications for these and similar houses can be had on application to the author.

In some respects, we who are striving for better building, receive some encouragement from the insurance people; at other times they give us body blows. They have built a laboratory in Chicago that is an absolute model of fireproof construction. Everything about it is brick and terra cotta; they advise the very best kind of building and suggest a most edifying code of building regulations for cities. Then again they seem to nullify their own efforts and throw cold water upon ours. In San Francisco, for instance, notable a wooden city, where they ought to make the rates exceedingly high in an effort to get the people out of the wood habit, they make them very low, because, forsooth, the city "has so excellent a fire department!" Is that not a good deal like advertising a low, swampy, malarial unhealthy place as a fine health resort because the doctors thereabouts are so very skillful?

Twenty years ago or so fireproofing materials were expensive, brick was not overcommon, terra cotta was in its infancy and fireproofing tile had just begun to be made. All those things were almost prohibitive in cost. Only the most far-seeing intelligent and well-to-do could afford to use them. Wood was cheap. It was the boast of the country then that we could supply the rest of the world for a hundred years. But we have devastated our forests ruthlessly, and the very regions that made that boast are now actually buying their lumber from other sections. Lumber has gone up and up and to-day costs 150 per cent. more than it did 20 years ago, while our brick and tile and terra cotta manufacturers have so improved their machinery that their product is put upon the market at almost that percentage less than it used to cost. So that, even in the first outlay, a fireproof house, for instance, will not cost over 10 per cent. more than would an ordinary house built of wood. And that is in its first cost. Considering the longer life, almost indestructibility of a fireproof house, the lesser cost of maintenance, the lower rates or almost total absence of insurance, your fireproof house means a much less ultimate cost than the wooden one, besides being infinitely more safe to inhabit, warmer in winter, cooler in summer, absolutely free from vermin, far more sanitary, contributing immensely more in all respects towards your peace of mind and comfort, repaying in a thousand ways the slight increase there is in its first cost.

Building a Fire-Proof House, Hollow Tile Basement Walls.

A Modest Cost Fire-Proof House.

Why in Heaven's name is it then that there is so little of that class of building being done? Simply and solely because the people have formed the habit of building the other way,—the old way, and have not yet learned the new. As with so many other reforms, we can only expect to get the people into the proper receptive frame of mind by educating them up to it. Publicity is what will do it. It is only through the efforts of such journals as THE CLAY-WORKER that the daily press and, later, the people, can be brought to the proper realization of what is what.

There is nothing quite so educational as pictures. The press to-day illustrates three-quarters of its news with photographs of the occurrences. The people want to see what has been done and what is being done. So I have illustrated these few notes with drawings of fireproof houses.

A Fire-Proof House, Hollow Brick Lining or Furring on Walls.

I have rather completely illustrated a moderate sized fireproof home that can be built for $3,900 anywhere in the vicinity of our larger cities. West of Denver, on account of excessive freight rates, and in some parts of the South, probably ten or fifteen per cent. would have to be added to that. A house of similar size, built as is exacted within most city limits, with outer walls of brick, with all the construction, the floors, partitions, etc., of wood, and some attempt at deadening of sound between the floors, etc., would certainly not cost less than $3,900. It seems to me that $4,000 may be considered within the means of pretty nearly any man who is able to build a house. To such a man the difference between wood and fireproofing should not cut a particle of a figure, with all the advantages of fireproof construction considered.

A Fire-Proof House, Laying the False Work to Carry Floor.

This house is planned with the greatest economy of construction, east in heating, etcetera. The rooms are not large but are ample for an ordinary family.

It is attractive externally and can be made exceedingly cosy internally, in fact quite nobby with some cleverly arranged tints and furniture. Some features would hardly be expected of a house of that cost. For instance, the terrace. Well, that is indeed an economy, for it is cheaper, most places, to pile the excavated dirt to form such a terrace than it is to cart it away.

The basement floor is cemented but the walls and ceiling are unplastered, as is likewise the attic. A coat of whitewash, however, will make the tiling of those rooms quite presentable. The foundation walls are of conduit glazed tiles. In appearance and assuring dryness of the basement, they are even better than brickwork. The outer walls above the basement are either of hollow brick or of regular fireproofing tile, faced with a buff or cream-colored ordinary brick, with bond courses of the same tile as the basement. The lintels of the openings are of brick on end, set in cement and on a metal fabric and cement soffit. The frieze and cornice is of brick and terra cotta, with some little terra cotta around the gables, the one ornament serving all purposes. The roof covering is an ordinary red tile. The construction of the floors is known as the "'Johnson Freproof Floor" cement, metal fabric and fireproof tile. This form of flooring develops wonderful strength. Using but a five-inch tile, the floors in this house are capable of sustaining 700 pounds to the square foot. The first and second story is plastered and the floors are of asbestic cement, clean, warm to the feet, sanitary, colored to suit the taste and can be left bare or can be covered with rugs. The mantels are of enameled brick. The stairs can be made of tile or of cement and metal or such other approved fireproof construction. The doors and windows are shown of wood, excepting the windows on the side exposed to the adjacent house, which are of asbestos cement and wired glass. For a few dollars more the doors and windows could be of asbestos fabric with wood veneering (a hot fire in the furnishings will destroy the veneering but the door will not burn and, if closed, will save the contents of the other room.) The roof construction is virtually the same as the floors and all the partitions are of fireproof tile. There is nothing to burn about the house. Neither is there any steel work that might cause delay in construction. It can be built in any weather and, I submit, is a model low-priced house.

House (D) at Detroit, Mason & Hayward, Architects.

One may, of course, cut his garment according to his cloth. Some people might be satisfied with the general arrangement of this house but desire greater elaboration outside. It is an awfully easy matter to add dollars! One may put on beautiful bay-windows of elaborate terra cotta work, Spanish tile may be used for the roof; enameled brick for the walls, and what not. Or more rooms may be added. My object is simply to show what could be done for $3,900.

Mistaken Ideas About Building Stone.

Some people who have seen these plans say that I must be prejudiced against stone, for there is not a particle of it shown. I am. The average layman associates stone,—granite and marble—with all that is grand and endurable. People have seen so much of fire that they realize that wood burns, but few of them appreciate that, if exposed to even a comparatively incipient fire, granite, "the rock of ages," so-called, goes all to pieces, and so does limestone and marble and concrete; and limestone doesn't even wait for a fire, but disintegrates, I may say of its own accord. People, too, often think that if they use some steel or iron in their building it affords them a fair degree of immunity, but I declare I would almost rather depend upon a piece of wood than a piece of unprotected steel. The one will burn with more or less speed, but you expect it to; the other will twist into cork-screw shape, if any heat is applied, and upset its load upon the heads of the poor devils fighting the fire. Steel, if unprotected with brick or tile, is worse than useless. Therefore, for the benefit of those who, like the people who have remarked about the absence of stone in this house, may wonder why the house is shown to be built almost exclusively of brick and tile, I will declare right here and now, that one of the first tenents of my religion is, that brick and tile and terra cotta are the only absolutely fireproof materials that we know of or that have been used in any country or generation. They have passed through far more intense heat in their manufacture than they can ever again be exposed to and are virtually indestructible, everlasting—safe materials for sane men to handle.

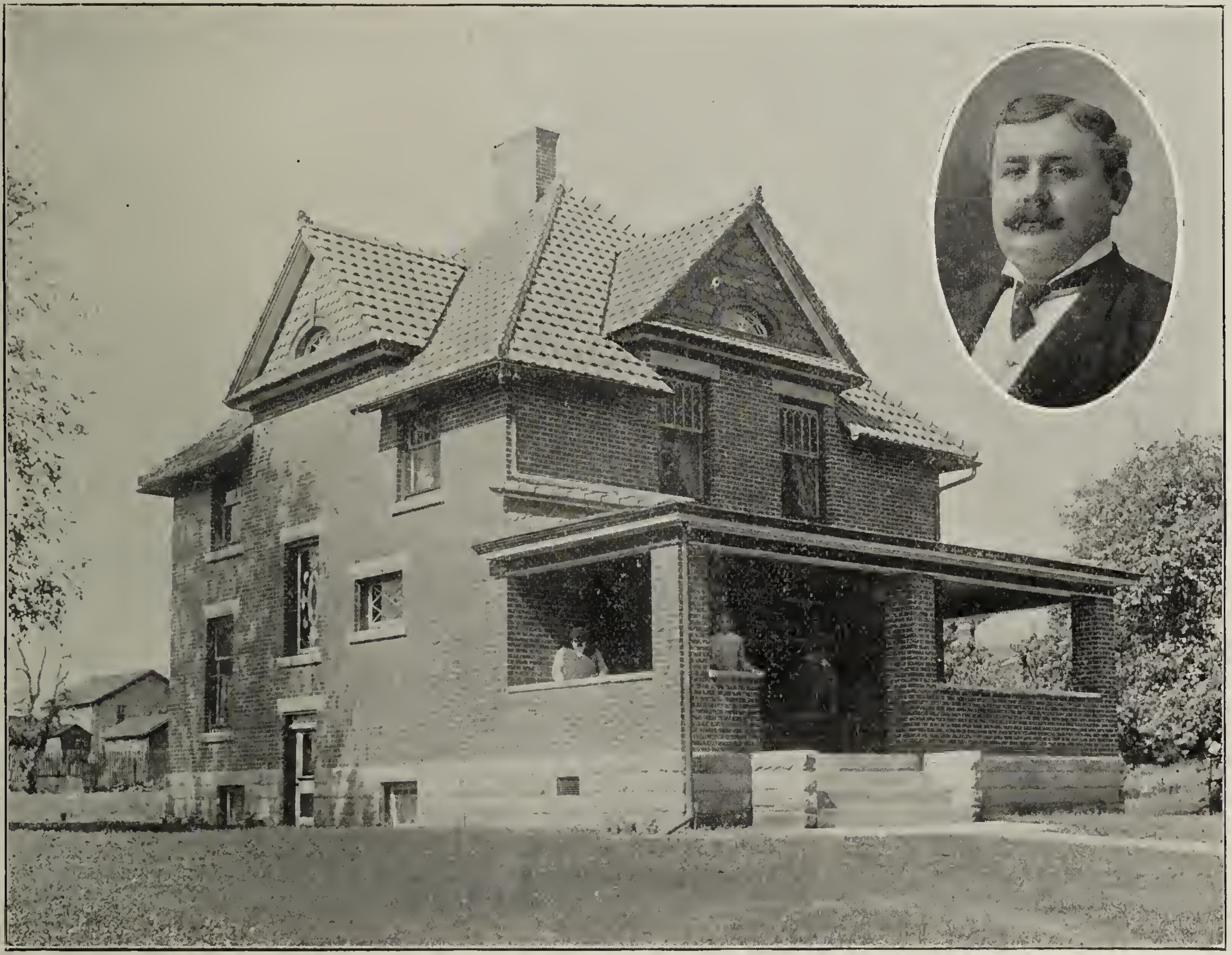
House (E) at Cincinnati, Des Jardins & Hayward, Architects.

The estimated cost of this house in detail is:

For excavation	$ 50.00
Tile foundation, brick walls, tile partitions, tile floors, stairs, plastering and other structural work	2000.00
Roof covering of tile	100.00
Doors, windows, cup-boards, etc.	610.00
Plumbing and lighting	340.00
Painting	75.00
Mantels, etc.	175.00
Heating plant	350.00
Incidentals	200.00
Total	$3,900.00

This same general scheme of plan may be adjusted to a simpler exterior, or it can be added to, or embellished with arched windows and terra cotta balconies, something along the line of a house in Detroit, Mason & Rice, architects, house "D." There is no limit to the possibilities. The scheme may be elastic as the purse will permit. You can make your house as elaborate or as plain as you wish and with all the frills that fancy and your means may dictate, but keep constantly in mind that the materials you are to build of should be uninflammable, indestructible by fire, to-wit and only—BRICK, TERRA COTTA AND STRUCTURAL TILE.

An excellent type of fire-proof house is that of Mr. H. H. Fate, of Plymouth, Ohio. It is constructed chiefly of brick and tile, and is the embodiment of comfort and security. The porch is built of brick and cement, the steps leading to it being of concrete. For the interior finish as little wood as possible was used, the floors being of mosaic tiling. Being connected with the brick and building business, Mr. Fate was able to construct this house for considerably less than $5,000 complete, but he thinks it could be built most anywhere under normal conditions for that figure, and at that price it is a much better investment than a frame house, being really cheaper in the long run.



A Fire Proof House and Its Owner, H. H. Fate, Plymouth, Ohio.

The Importance of Good Color "Schemes" for Buildings.

Strange how little we American architects do with color. We have a red brick house, or a yellow brick house with a red tile roof or a green roof and that's about the gamut we run. Most beautiful effects can be gained by the use of enameled colors, even on flat surfaces, dainty patterns can be worked out and brilliant yet harmonious effects gained. Our coloring schemes are tame. We certainly have much to learn in that respect from the Persians of old. They were masters in enamel and their work was gorgeous, beautiful. With us it is lack of taste, it certainly is not lack of material. There are American makers of tile and brick that produce material equal to that of antiquity, surfaces that do not craze, the richest colors and most easily adapted shapes.

It will be observed in all my various plans that I have shown the stair-way enclosed. That is a point upon which I absolutely insist. It is almost as essential to the well-being of a house as that the proper materials be used in construction. Open stair-ways and elevator wells, vertical openings through the floors of buildings, are the most fruitful cause of the spread of fire. The tendency of flame is always upward. I have seen a warehouse, a one-storied one, whose contents burned and smoldered for hours, while similar contents in a building five or six stories high, with openings in the floors, would have been consumed in almost as many minutes. People have to learn that. Absolutely fireproof partitions should surround the stairs and elevator wells and the doors should be self-closing. True, it means opening and closing a door every time you go up or down stairs, but that small inconvenience is as nothing when compared to the protection that that one little precaution affords life and property. Remember that even in an absolutely fireproof house, a good lively blaze may take place in any room; an overturned lamp, a youngster playing with matches, and your fine draperies and beautiful furniture are liable to go the way of all things inflammable. The thing is to limit the sphere of the activity of fire to as small an area as possible. If there are doors instead of archways in your room, and the doors are closed, you are reasonably sure that the fire will not get beyond that room, it is easy to extinguish and has done no damage other than to the furniture and decorations in that one room. With your beautiful open and wooden stairway, your little fire is bound to find its way upstairs in very short order, and even if it does not, the people in the upper floors are liable to be choked and scared half out of their wits.

Besides affording immunity from the spread of fire vertically, the closed stairway is an immense advantage in the home. It cuts off sound. How embarrassing some of the upstair noises are when there are guests downstairs! The open stairway is a synonym for drafts. Drafts mean colds and doctors' bills. Apart from that, the house is easier to heat, the coal bills are lessened and every housewife knows that the open stairway means dust and dirt downstairs every time the bedrooms are swept. Moreover, as planned in these houses, observe that the stairway opens into the pantry and back part of the house, thus affording a common means of communication from all parts of the house, up and down. Being closed off from the front part, from view, that stairway is one for all purposes and the necessity for a back stairway, additional expense and waste of room, is obviated. Apart from the question of fire, do you know that the closed stairway means a saving of about 12 per cent. in your coal bill and takes off just about 15 per cent. of the cares and work of housekeeping?

Terra Cotta Versus Marble Mantels.

I would have, even in the expensive houses, handsome terra cotta mantels. People have gotten into a rut of marble and cabinet mantels. In the marble ones, if you depart from the slab affair and get into any ornamentation, the cost climbs up amazingly, while in the very best of cabinet mantels, the "gewgaw" style predominates. Beautiful effects in form, ornamentation and color can be obtained in terra cotta and if the manufacturers would only have some handsome designs made, of stock mantels, these could be put upon the market at really ridiculously low figures and would soon leave the marble and sideboard affairs behind in the competition for popular favor. Some rather pretty tile effects are shown in facings and hearths, but the tile people and the terra cotta people and the brick people are a trifle slow in creating, forcing a popular demand for their wares. The thing to do is to get up a great variety of stock designs, display them well, advertise them well, get them on market. People cannot be expected to ask for things that they know nothing about and have not seen. Much as we think we are doing in terra cotta and brick and tile, as far as the decorative features of the work are concerned, the French are leaving us way behind. There they are making whole store fronts of faience, and their wall decorations are splendid. It is an art with them; with us it seems to be somewhat of an undeveloped business where we are satisfied to use the same forms and combinations as our fathers did. We have the talent, the means, the ability to do good work. The superb exhibit of the Winkle Terra Cotta Co. at the St. Louis Exposition would demonstrate that if nothing else did. The thing to do is to utilize those advantages, to experiment, to devise new things, to be alive and awake.

Why, it is plain that the possibilities, artistic as well as structural, of burned clay, are not one hundredth part appreciated. The art that was once so near perfection and was then permitted to become almost extinct and has lain dormant so long, only now to be revived, is indeed in a state of Renaissance—re-birth—in the broadest meaning of the term, and it is incumbent upon us who have always believed in it, preached it and tried to keep awake an interest in it, to not rest satisfied with what has been done, much as that may seem to be to many of us, but to work on and strive to improve it, to get our people to appreciate it, and to place it upon the high plane it once occupied when it was termed the "Art of the Gods."

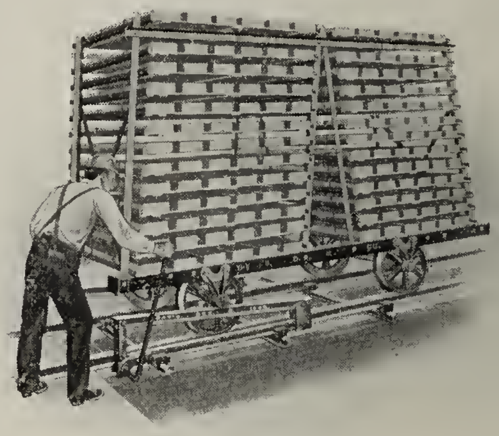
A lost temper is something we practically always recover, but still it is never benefited by having been lost.

THE FIRST PRACTICAL DRYER CAR BRAKE—

New Device Patented by The Standard Dry Kiln Co.—Stops Loaded Cars Without Jarring the Green Brick.

AFTER MANY YEARS of trials and tribulations caused by the lack of a practical and effective means of stopping loaded cars in the dryer, brick manufacturers may now obtain positive relief from this source of trouble and loss. A new device called "The Standard" Dryer Car Brake has just been patented by The Standard Dry Kiln Co., of Indianapolis, Ind. It is guaranteed to put a stop to all car-stopping troubles. The important feature about this new brake is that it stops a line of loaded cars *gradually*, instead of bringing them to a dead stop. The result is that the green brick are not jarred or damaged.

The accompanying cut illustrates the simple working of "The Standard" Car Brake. The device sets outside the rail on both sides. It can be operated by anyone, as all that is necessary is to throw a lever up or down. This lever lifts and lowers the brake on both rails. The bars forming the brake are of precisely the height, at the end nearest the cars, to permit the boxes of the car wheels to pass over them. These bars slope upward, as is shown in the cut, so that it is practically impossible for the car wheels to pass the end of the brake nearest the dryer door. Even should the front wheels do this, the incline must bring the car to a stop before the rear wheels can possibly get over the brake.



The new car brake is manufactured exclusively by The Standard Dry Kiln Co., and will be furnished along with the balance of the drying equipment to purchasers of "The Standard" Brick Dryers. It is also to be sold separately. The manufacturers will be pleased to supply further information and prices on request.

TILE NOTES FROM UNKNOWN EUROPE.

Beginning with Rovigno, on the east coast of the Adriatic, and extending to the south and east, tile supplants the slate and the thatch almost exclusively on the roofs of the houses, and this is of the usual terra cotta color, now fashionable in our own country. Even into Montenegro has this custom made its way.

At Ilidje, Bosnia, in the cellar of one of the government hotels, there has been discovered a rare old mosaic and tile floor of some Roman home, and this remains there for the benefit of the curious.

In northernmost Turkey, at Plevlje, the red roofs of tile on ratty frame harems produce a curious contrast.

At the baths at Alt-Schmecks in northern Hungary, the lower half of the walls of the bath rooms are all of white tile. In the "*luxus*" bath, or extraordinary bath rooms, this is changed to blue along the walls, while the floor is tiled in white.

FELIX J. KOCH.

Written for The Clay-Worker.

Mexico The Land of Sunshine.

Brick Made on American Machinery Now Competing With the Native Adobe and Hand Made Brick.

NO DOUBT it would be of some interest to a great number of readers of The Clay-Worker—surfeited with a wealth of descriptive matter pertaining to clayworking plants, of the great Republic of the North, to learn something of the doings of their brothers of the craft, who have invaded the wilds of Old Mexico, and are bidding for favor in this backward land of "adobe" and "tepetate."

But a few years since saw the installation of the first modern machine plant in this country, but so well have they prospered that to-day there are many, and, it seems, quite sufficient to supply the growing demand for some years to come. Of all the larger and well appointed factories in the Republic possibly the Teoloyucan Brick Co's plant at Teoloyucan, State of Mexico, would be considered the leader in point of output, quality of ware, and completeness in modern kilns and machinery equipment.

This plant, located in Teoloyucan—twenty-three miles north of the City of Mexico,—is situated on the main lines of the two greatest railway systems in Mexico—The Mexican Central and The National Lines of Mexico—which offer the finest of shipping facilities direct to Mexico City, where the great bulk of their product is marketed. Four side-tracks into the works, affording ample loading track for their immense continuous kilns and battery of up-drafts.

A Street Scene in the City of Mexico.

This yard was first started some seven years ago as a dry-press plant, but on account of the inadaptability of the peculiar clay to this method of manufacture, little was accomplished. About two years ago the property was bought up by Mr. Thomas Quirk, of Esperanza mining fame, and its immediate conversion into a stiff-mud plant begun.

After the installation of heavier machinery and an increased output it became apparent that new kilns would have to be added to the existing battery of three up-drafts (with a capacity of 200,000 brick each, and as the cost of coal makes it a vital element in this country; Virginia coals $18.00 per ton, wood $13.00 per cord, F. O. B. factory) after much investigation it was decided to erect the Haigh continuous kilns, as embodying moderate priced construction, a minimum of repairs, perfect burning and greatest fuel saving.

The last of this great pair of kilns was finished in April, 1905, while the first has been in use since the summer of 1904. Together they comprise seventy chambers with a capacity of 1,500,000 brick. Both are giving satisfaction, burning a perfectly uniform grade of product from floor to crown, with an amount of coal that seems incredible when it is considered that it requires something over 2100° of heat and from seven to eight days' firing to properly finish this difficult burning clay. "Alexandria," "Eureka" and other grades of good Virginia coal is used, an average of about one-fifth of a ton of coal being required to burn off a thousand standard size (American) building bricks.

These kilns are of the well-known Haigh continuous chamber type, the back-draft being prevented by the introduction of paper partitions which divide the brick chamber into several "sections" composed of, what is ordinarily called "chambers," of which five or six would mark one "section." As soon as the heat advances sufficiently to burn out these paper partitions, it proceeds to the next section ahead and so on around the kiln. By this method a slow, wood water-smoking can be carried in the section ahead of the coal firing, thus effectually eliminating any trace of "white wash" on the burned ware.

The brick are set cross-kiln in straight double-header benches from floor to crown, square, open firing shafts about six inches square are left in the setting from crown to floor for the passage of the fine screenings used in the "top-firing."

The kilns are not only fired from the top, but also in the door-ways along the sides, the doors being walled up, leaving a firing hole about twenty inches from the ground, and immediately under this, on the ground a hole for air and fire-cleaning. The fine screenings from the coal are used in the top firing, while the lump is used for the door-firing, the coal in both instances burning on the floor, there being no grates used in these kilns.

Hotel Interior, Aguas Calientes, Mexico.

Floating Garden, Near Mexico City.

A Market Scene in Mexico.

Mexican Dwelling House.

The company's clay lands are immediately adjoining the factory, where they own some ten acres of ground, the clay, a smooth or black alluvium, extending to a depth of 18 to 20 feet, with no stripping. There is unlimited clay land of the same quality adjoining, so that there is no uneasiness from this score.

The clay is handled from bank to iron side-dump cars, by a Thew No. 1, automatic steam shovel which has an easy capacity of 150,000 brick per ten-hour day. It is moreover found that since the installation of this shovel, the perfect admixture of clay from bottom to top of bank, including occasional thin strata of sand in the bank, produces a more uniform quality of ware.

The loaded clay cars, in cuts of three or four are drawn by mules some one hundred and fifty to two hundred yards to the foot of an incline, where they are drawn by cable and hoisting drum to the second floor of the factory building and there by track and turntable transferred to the different bins which supply the several machines. The clay is dumped into each bin and there fed by two men to the smooth-roll crushers, which are set immediately above the pug-mills—this being the only grinding necessary, screening being quite unnecessary for the clay. The clay requires very little tempering—indeed it is so moist at times that pulverized and dry, screened clay is added to stiffen the mud.

There is no winter here, and the plant runs steadily twelve months in the year. There are, however, a few months of each year—usually May, June and July, when the frequent showers make the clay in the bank quite soggy and wet,—too much so for stiff-mud brickmaking. To meet this emergency, a large shed has been built, 100 x 200 feet, which is stored, in dry season, with dry clay sufficient to make some seven or eight millions of brick.

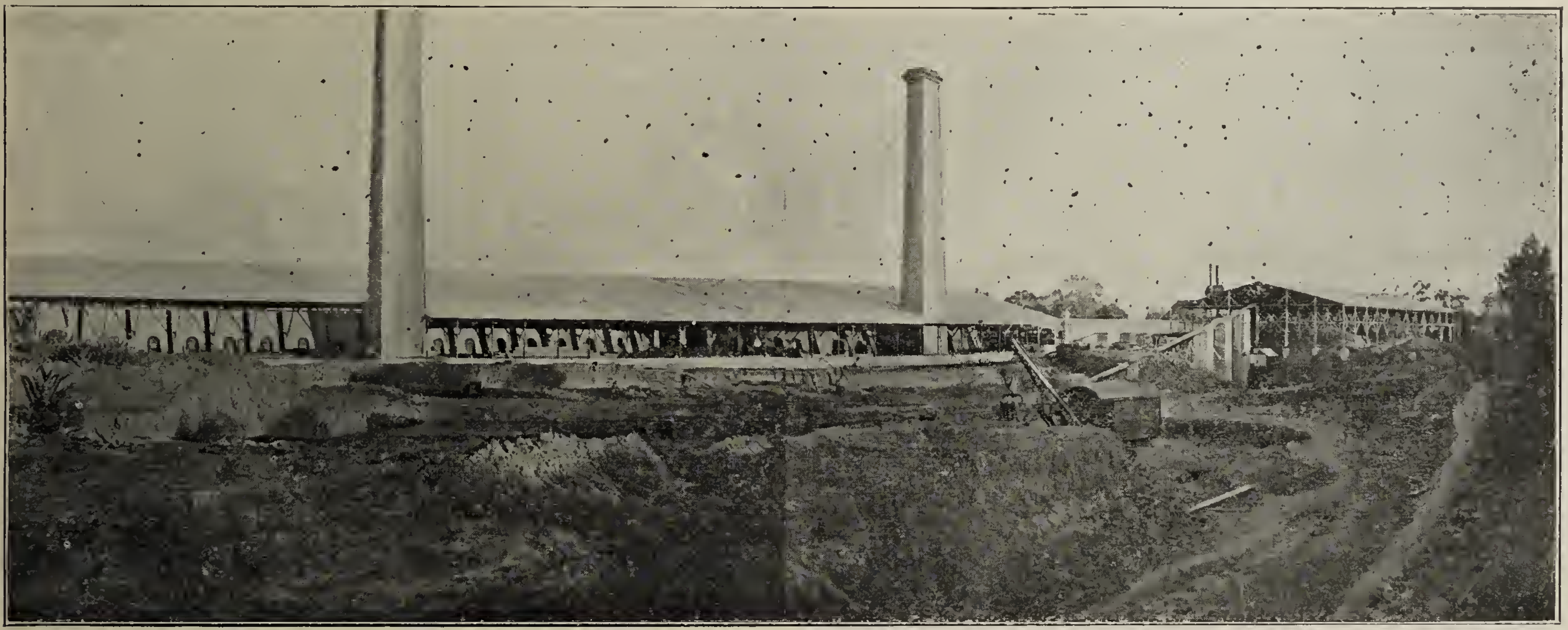
By using from this stock of dry clay, sometimes as a mixture with the wet clay from the bank, and in extremely wet weather entirely from shed stock, the factory is enabled to run steadily through the longest "rainy season" with ease.

From the pug mills, by belt conveyor, the clay is transported to the several auger machines which turn out the various products of the company; brick, both common and

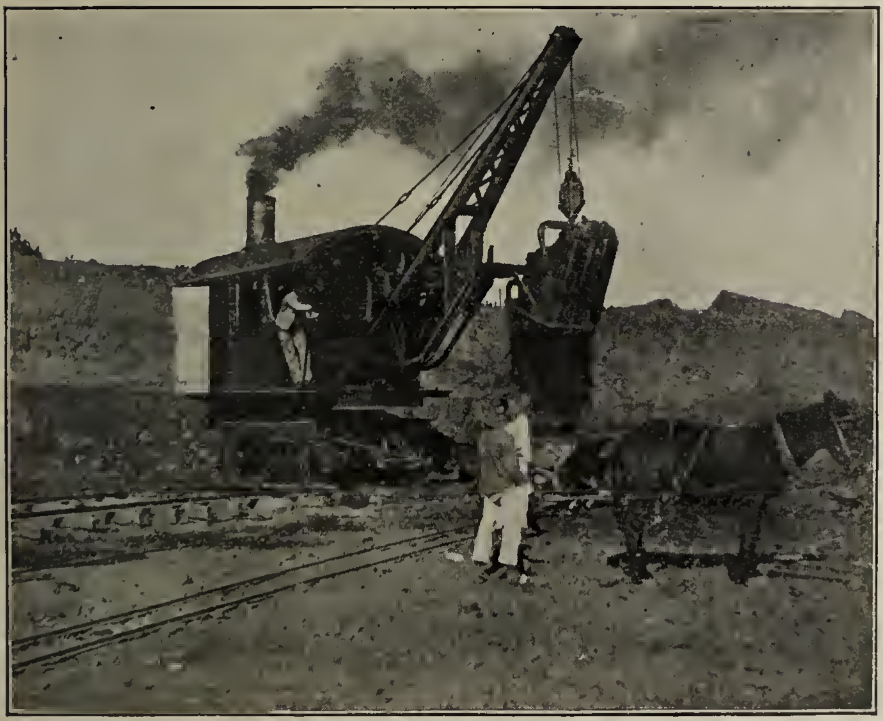
A Modern American Brick Plant in Mexico.

Peons Taking Sand from Beds Near Brick Plant.

Birdseye View of Plant, Adobe Houses in Foreground.



General View of Plant of the Teoloyucan Brick Company, Teoloyucan, Mexico.

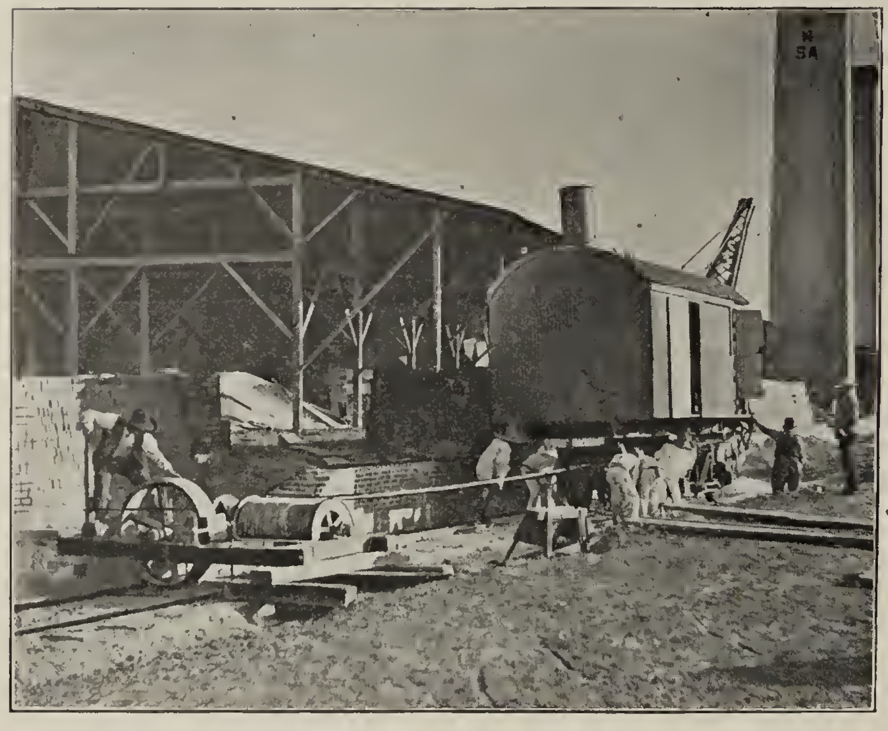


A Thew Steam Shovel Doing Work of Twenty Peons.

Method of Gathering Clay Before Introducing Steam Shovel.

repressed in both plain and ornamental shapes, floor-tile, roofing slabs and tile, end cut hollow brick and various sizes in hollow building blocks.

All the ware is dried in drying sheds, either in hack or on racks, as the clay in this entire valley of Mexico is very tender, and no dryer has yet been found that will dry same successfully. Even a slight breeze, blowing on green ware, is sufficient to check same badly, so that as a precaution, long strips of heavy burlap are spread over the hacks, of freshly made ware, and left on for about a week or until the ware becomes hard and firm, when the danger is over. It is a peculiar feature concerning the "Valley clays" that practically all the shrinkage occurs in drying; the burning to a good building brick hardness, reveals practically no shrinkage. For this reason—as may be conjectured—few troubles are encountered in the burning. It is simply a slow, steady watersmoking until the ware is thoroughly dehydrated, when the heat can be raised quite rapidly and without danger, the ware burning red and very hard and tough though difficult to vitrify. By holding the high heat on the kilns for about two days, the color of the ware is much improved, in that case being a very deep, rich red, suitable for high-class facing work.


Lowering New Steam Shovel into the Pit.

Clay Shed Stored With Clay in Anticipation of the Rainy Season.

One of the Five Drying Sheds Which Together Hold Four Million Brick.

The transporting of green wares from machine to hack is done with flat top, two-wheeled spring trucks, and from hack to kilns by wheelbarrows and mule truck. All the work done on the yard is by Peon (Mexican Indian) labor, and considering the prevailing wages,—fifty cents per day, Mexican currency, (about 25 cents U. S. money) the employer gets value returned for his money. Considerable of the work must necessarily be done on the "day-work" plan, but whenever practicable, the work is alloted by "task." It may be interesting to note how the work is guaged so as to assign proper tasks in the different departments. We will say, in loading brick, kiln to car, it is found that with the closest supervision it takes eight men a day to load a car of fifteen thousand brick. The next day the gang is split and each group of four men is assigned a day's task to load a car of equal size, which by "hustling" they usually do with a couple of hours to spare.

It is well known by all employers of Peon labor in Mexico that with a task assigned which he can possibly see his way through with, the Peon will work as faithfully as a beaver until same is finished, doing more work for the employer, and saving considerable in the cost of supervision, which is a very important item where the "day-work" is in vogue. Considering the mode of life of these people, living as they do in old "adobe" houses, no bed but "Mother Earth," "tortillas" (a sort of a pancake made of cornmeal and water) and beans, about their only fare, with a few cents worth of "pulque," the intoxicating juice of the "magney" plant, to drink, and it is truly wonderful what a hardy and vigorous race they are. Their uniform dress for all seasons consists chiefly of sandals, muslin and shirt, topped off with the familiar Mexican "sombrero" of straw and of course every one with his blanket.

The machinery of the plant, which is quite complete, consists of two one-hundred horse Atlas boilers in double setting; engines,—an Allis-Chalmers, 150 H. P. Corliss, a Chandler & Taylor 50 H. P., and an Erie 20 H. P. automatic; this latter to drive the Western electric generator that supplies light to every part of the plant, with its 300 lamps.

There are three complete outfits of auger brick machinery, all of C. W. Raymonds Co's make; two No. 1 Datonian auger brick machines, one with hand-cutter and used for the manufacture of various kinds of floor and roofing tile, the other fitted with automatic cutter and double "Victor" repress for making all kinds of plain and ornamental brick. Both outfits are very complete, with adequate pug-mills, conveyors, smooth-roll crushers, etc. The Third outfit consists of a Raymond "Niagara" hollow-ware machine, with pug-mill, conveyor and roll-crusher on which is manufactured various sizes and shapes of hollow building bricks and blocks.

The company maintains a sales-office in Mexico City, which is at present in charge of Mr. W. F. Cox, formerly salesman for Fairbanks, Morse & Co., at Indianapolis, and as Mr. Cox has had a wide experience in this and other Latin-American countries—speaking the Spanish fluently—the company's interests are well taken care of there.

Mexico City offers a rich study for the modern clay-worker in that, although practically all the building work is of masonry of some sort or other, (lumber on account of price, not being in the field whatever) still it is a constant "campaign of education" to show the merits of first-class machine-made ware, as against the cheaper, (and almost worthless) hand-made "tabique" (a large 3x5x10 inch, porous and half-burned brick made by the hundreds of little native yards about the city) and "tepetate" stone, (a soft material, by some claimed to be partially solidified volcanic ashes.)

It is, however, gratifying to note that the Government is now specifying for all the new public buildings the use of first-class material, and when it is known that there are many millions of dollars of Government work about to start, (among the jobs, the great National Theatre, to cost ten millions of dollars) it will be seen that things look very encouraging for the brickmaking trade for some time to come.

The prevailing prices in Mexico City are: Common brick, $24.00, repressed (facing), $28.00, to $30.00, ornamentals, $40.00; plain flat, 1x8x8in repressed floor tile $40.00, and roofing slabs ⅞x5x10in., $20.00 per M., all delivered on the job. These last represent the great bulk of the roofing material used on the flat roofs of the houses in this country, being laid flat and grouted with a thin mixture of cement. It is simply a rough, wire-cut slab, made by splitting the column of mud as it emerges from the machine by wires stretched tightly across the mouth, cutting them off the desired length on any ordinary cutting table. This slab was formerly made altogether by hand, singly, in soft-mud molds, and the innovation of seeing them come out of a machine "ten abreast" forty to each swing of the cutter, must have been very disheartening indeed to the native hand brick maker. In the city, brick are delivered from car to job in the great, high-wheeled carts that are such a familiar sight to tourists to this quaint old city.

The cart is drawn usually by one small mule which appears about half as tall as the clumsy vehicle, but they manage, somehow, to transport some four or five hundred brick to their destination. About three or four loads is considered a good day's work for the man and beast, and a uniform charge of $2.50 per thousand holds to all points within the city limits. This company is the pioneer concern in the manufacture of hollow-ware building material in the Republic of Mexico, and the great interest shown by leading architects and structural engineers in the City of Mexico, regarding their new products in the way of hollow building bricks, and block augers well for the future of this industry. The site of the city was formerly a shallow lake—reclaimed by a great system of drainage canals—and as the ground is very unstable—badly settled and cracked buildings, leaning towers, etc., in evidence on every hand—it would seem as if hollow ware was peculiarly fitted for filling a long felt want here.

Mr. Thomas Quirk, financier and former owner of the great Esperanza mine, and Mr. George I. Ham, president of the U. S. Banking Co., of Mexico City, are the owners of the plant. Both gentlemen reside in Mexico City. Bernard J. Gallagher, formerly of the Sheridan Brick Works of Indianapolis, and the Poston Paving Brick Co., of Crawfordsville,

Glimpse of Up-Draft Kilns and Machinery Building.

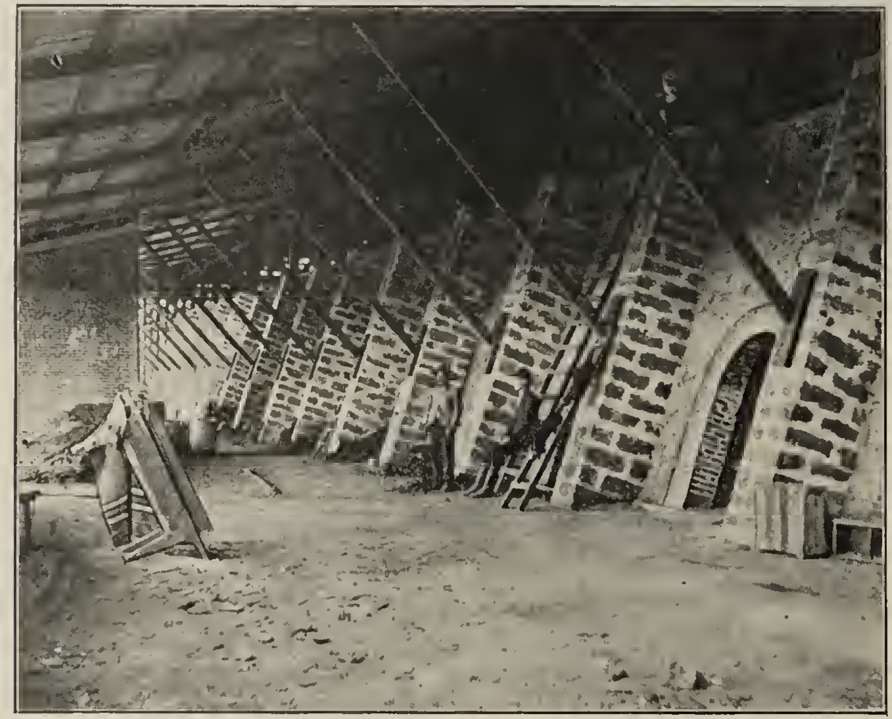
Bernard J. Gallagher, General Manager.

View From Plant Looking South Toward Mexico City.

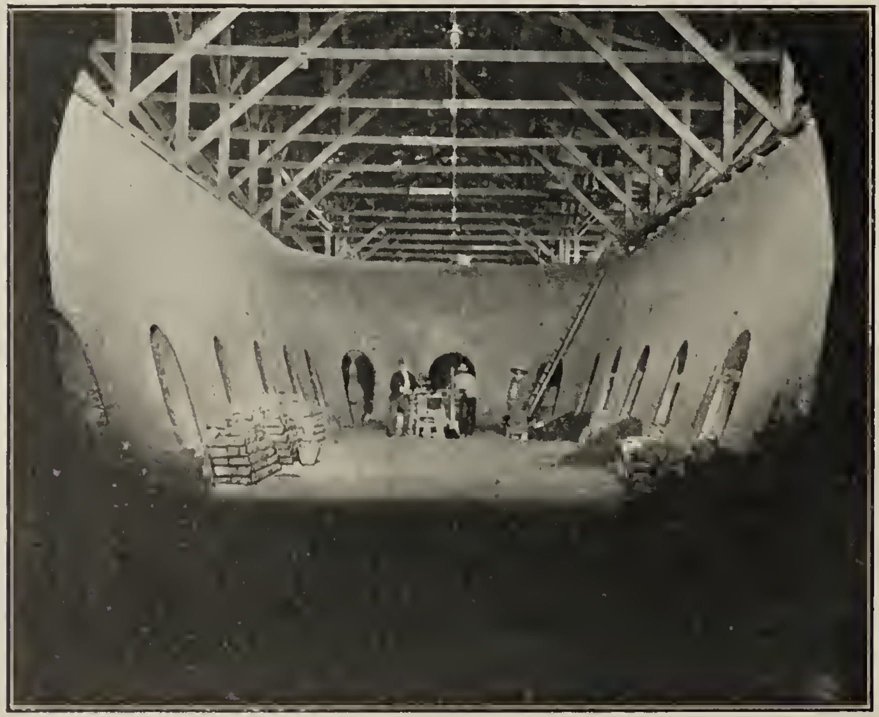
Indiana, is general manager of the Company; Mr. W. H. Morrison of San Antonio, Texas, is superintendent of the works; M. L. Sielzer, of Mexico City, office manager, and J. H. Nussel, of Brazil, Ind., hollow-ware expert.

Mexico is steadily growing in favor as a health and pleasure resort, and every recurring season brings an increased number of American tourists, some seeking health, some pleasure and some to establish themselves in business, and each and all, as a rule, find what they are looking for. The American colony is already an influential factor in Mexico City, and visitors from the States are almost sure to find friends and acquaintances there. It is a great city in all that the term implies. It has great wealth, is well governed and strangers who enter her gates find within all that goes to make life worth living. Hence, it is but natural that as the people from the States become better informed as to its attractions, it grows in popular favor. Those who, like the writer, have cast their lot here, have little or no occasion for regret. We have splendid railroad facilities now, so that a tour of Mexico is a luxury, not a hardship, and I advise those who are figuring on a tour abroad to consider the charms of Mexico, they will find a sojourn here a delightful, mayhap a profitable experience.

An X. Hoosier.



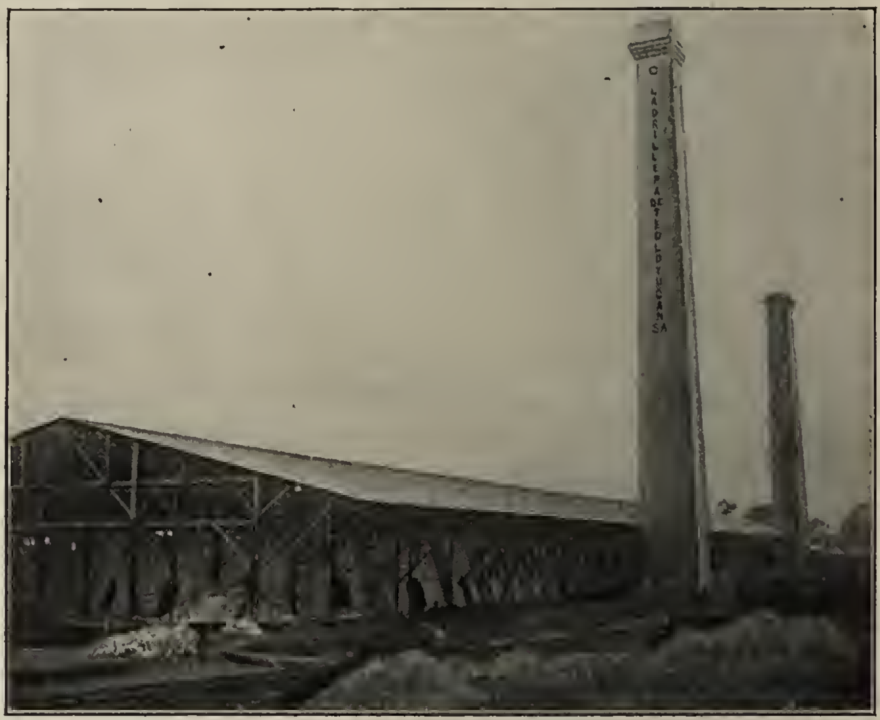
Along the Side of the Haigh Continuous Kiln Having a Capacity of a Million Brick.



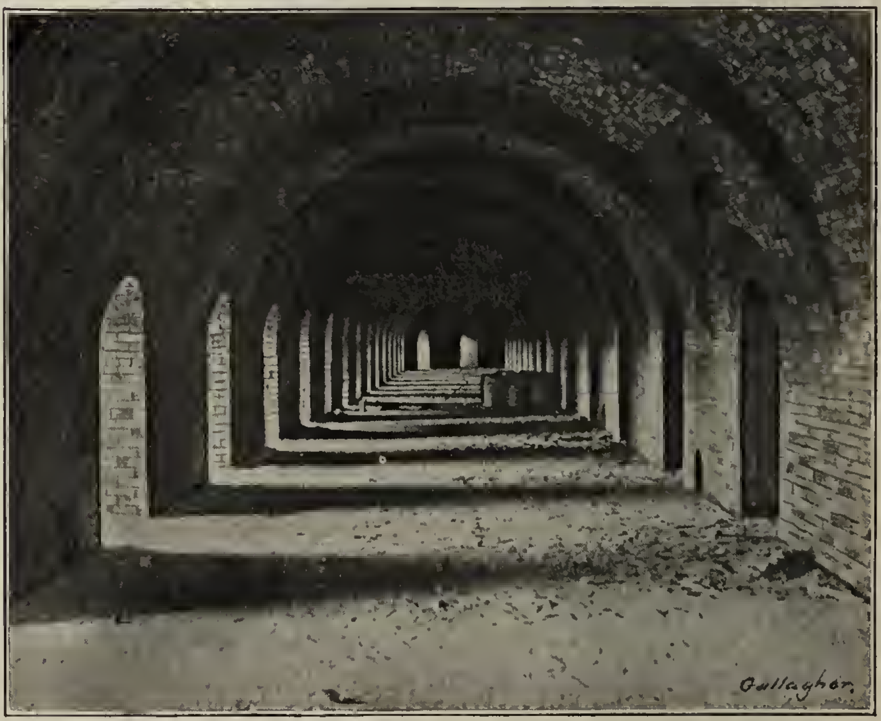
Interior "Court" of one of the Continuous Kilns.

LEGAL DISCUSSIONS AFFECTING LABOR LEADERS.

We have at hand a report of decisions and decrees recently issued by the Supreme Judicial Court of Massachusetts in two strike cases, which not only show that relief can be had from some of the union delegates by recourse to law, but should also serve as retarding influences against the making of unjust demands on the part of union leaders, and backing them up by calling strikes. The cases in question are those of the Norcross Brothers Company vs. bricklayers' union No. 3, et al, and Joseph C. Pickett, et al, vs. bricklayers' Union No. 3, et al, under date of October 30, 1905, and the decisions are against the union in both instances. In the first instance the trouble came up about the flat arches over windows and doors. These arches were made and put together at the company's yard, and when they were put in place the business agent of the union wanted them taken down, and the masons working on the job permitted to make others by hand, and on the refusal of the company to accede to his demands, ordered a strike. The second case came up over trouble that arose over the employment of others than the regular brick layers to do pointing. They were troubles of a kindred nature that arise in various forms from time to time between contractors and the unions, and it is to be hoped that the effect of the decisions will have proper weight with union leaders in all lines so that they may be led in future to more logical reasoning and less arbitrary methods.



One of the Haigh Continuous Kilns. The Stack is 160 Feet High.



One of 47 Burning Chambers of the Haigh Kiln.

Written for The Clay-Worker.

CLAY INDUSTRIES OF THE INDEPENDENCE QUADRANGLE, KANSAS.

IN BULLETIN No. 260, recently issued by the U. S. Geological Survey, we find a brief account of the clay industries located in above mentioned section of the State of Kansas, and comprising the most developed localities in that State.

Location.—The Independence quadrangle lies in the southeastern part of Kansas, adjacent to Indian Territory and within the Kansas oil and gas fields. It has an area of nearly 1,000 square miles. Its chief towns are Independence, Coffeyville, Cherryvale, Neodesha, Caney and Elk City.

Geology.—The rocks of the district are of Coal Measure age, and consist of limestones alternating with heavier shales and sandstones. In general they dip gently northwestward at the average rate of about 15 feet per mile, and exhibit but little evidence of disturbance. They include seven formations and have a total thickness of about 1,000 feet.

The clay resources of the quadrangle consist of numerous beds of shale, some of which attain a thickness of 80 feet or more, and are exposed over an area of many square miles. At present the most important and the most extensively developed beds are at Fredonia, Buxton, Caney, Buff Mound, Neodesha, Sycamore, Table Mound, Independence, Tyro, Cherryvale, Coffeyville, and northwest of Coffeyville. The abundance of natural gas in all parts of the field and these shales render the region peculiarly favorable for the development of clay industries, which include the manufacture of brick, roofing tile, and pottery.

Brick.—Brickmaking is one of the most important industries. The plants now working produce about 75,000,000 bricks a year, and have a capacity considerably greater than this. Active operations are in progress at Coffeyville, Cherryvale, Independence, Caney, Sycamore, Neodesha and Buff Mound. The material used at all these plants is practically the same, being common measure shales. At Coffeyville and in the region to the northwest are three plants operated by as many different companies. The plant at the southern edge of the town uses shale from the Parsons formation, the other two plants are northwest of town, and use shales from the formation overlying the Parsons. This overlying shale also supplies the plant at Mound Valley, five miles east of the Independence quadrangle. At Cherryvale the six plants, operated by six companies, are situated both northwest and south of the town, and use the Cherryvale shale, which occurs in the mounds that are so numerous in that locality. At Independence the brick plant is in the northwest part of town, and the shale is brought by the Santa Fe Railroad from Table Mound, which stands on the banks of Elk river, four and one-half miles to the northwest. At Table Mound the shale bed has a thickness of 80 feet. At Caney the plant is north of town, at the foot of a large mound, from which the shale is obtained. At Sycamore the plant stands north of town, on the eastern side of the bluff, from which the shale is quarried; and about midway between Sycamore and Neodesha, and similarly located, with reference to the same escarpment, is the Neodesha plant, using the same shale as the Sycamore plant. This shale is also used by the Altoona or Buff Mound plant, located at the west base of Buff Mound, four miles north of Neodesha. Here the bed has a thickness of 60 feet. The pits of the Sycamore. Neodesha, Altoona and Independence plants, together with those of Table Mound, are all excavated from the same shale, contained in the upper part of the Chanute shale, just below the Iola-Allen limestone.

All the plants of the quadrangle have many points in common. Though their machinery, kilns and other outdoor conveniences may differ, they are alike in that they make bricks from practically the same grade of shale, which is quarried, crushed, tempered and molded in substantially the same manner. There is a striking similarity also in the kind of brick manufactured. The chief product is common building brick, next in abundance come vitrified brick, or pavers, followed by sidewalk and the different styles of dry pressed or repressed ornamental brick.

Common Brick.—In the manufacture of common building brick the shale is ground to a fine powder, is sufficiently tempered with water to make a nice mold, and is then forced through a die by auger motion. The rod or mass of clay forced out is carried by belt conveyor to a proper distance and cut into brick by machinery. For burning, the brick are usually built in a series of rectangular kilns, 10 to 14 feet high, placed 6 to 10 feet apart, and are supplied with gas by lateral pipes which tap a common main laid through their midst. A large Bunsen burner attachment is placed at the kiln end of the lateral, so that the amount of air to be mixed with the gas is well regulated. It usually requires from six to nine days' firing to burn such a kiln of brick, and from three to five days for the mass to cool after the gas is shut off. Owing to the iron oxide in the shale all the building brick in the area under consideration burn to a beautiful uniform brick-red color.

Vitrified Brick.—Thus far the demand for building brick has been so great that some of the companies have confined their efforts entirely to the production of this class and have not made vitrified or paving brick. The latter are made, however, by all the larger companies. The only essential difference between a building brick and a paving brick is in the firing. The latter requires a much higher temperatude than the building brick—a temperature that will bring its entire mass to state of incipient fusion. To accomplish this a special style of kiln is necessary. The one usually employed is some form of the circular down-draft kiln, with a low, dome shaped roof and open draft spaces connecting from the floor with the chimney. Gas mixed with air is admitted on the side, similar to the method already described for rectangular kilns. Upon entering the kiln it is deflected upward to the concave roof and then reflected down through the mass of brick to the opening in the floor and out through proper conduits and chimneys. It usually requires about two days longer firing to burn a kiln of vitrified brick than one of common brick.

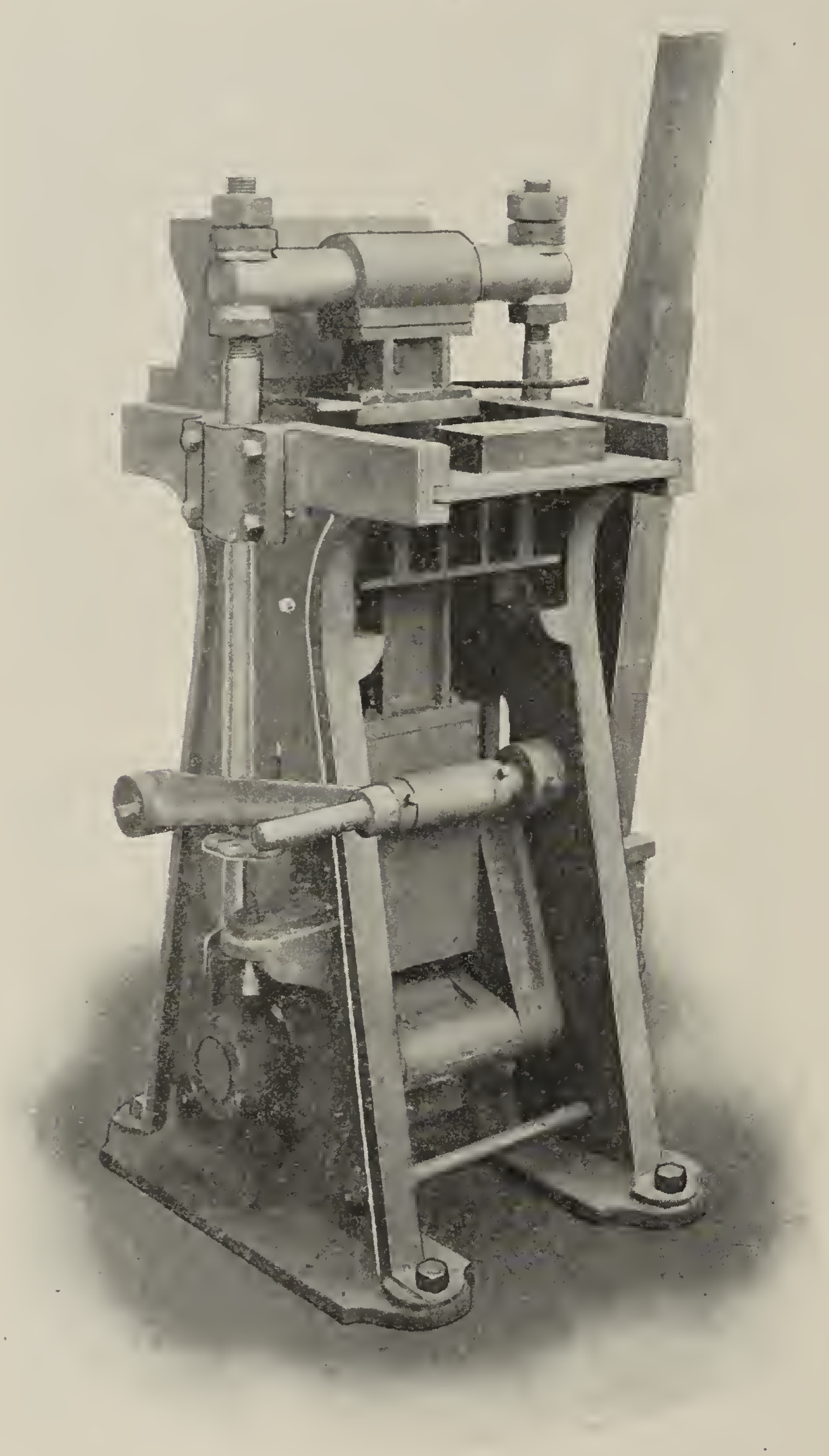
Dry Pressed Brick.—The essential differences in the methods of manufacturing dry pressed and common brick are the amount of water used and the enormous amount of pressure to which the latter are subjected. This small amount of water moisture keeps shrinkage and warping in dry pressed brick at a minimum and is one of the reasons for the superorority of this brick. The operations of the Federal Betterment Company at Cherryvale show that where there is no culling or discarding, dry pressed brick can be placed on the market almost as cheaply as others. Of the plants enumerated, only seven produce dry pressed brick, namely, the two each at Cherryvale and Coffeyville, and those at Independence, Caney and Sycamore.

Roofing Tile.—A plant for the manufacturing of roofing tile, owned by the Western Roofing Tile Co., is operated at Coffeyville. It manufactures red tile of ordinary shape, and also a number of different kinds of fancy shaped tile of varying colors, as demand or occasion may require. It makes also a great variety of ornamental patterns for cornices, gables, finials, etc., and is well equipped for such work. The company is fortunate in having a clay that burns to a rich, deep, uniform, red of pleasing tint. Although the industry dates only from 1903, the company has secured an excellent start and is already shipping roofing tile as far east as St. Louis, and as far north as Iowa.

Pottery.—A large pottery plant, operated by the Coffeyville Pottery and Clay Manufacturing Co., stands at the northeast edge of the town. It makes practically all kinds of stoneware, such as crocks, jars, jugs, etc., and during the greater part of the year it produced about 40,000 gallons of hollow ware per month, using upon the average, 4 pounds of clay per gallon.

THE GRATH SPECIAL HAND POWER BRICK PRESS.

For sand-lime and dry clay press brick, the Grath press is positively the simplest, strongest, and most powerful hand power press ever invented. The pressure on the material is applied so that all the air is excluded while being pressed, and the mass is pressed equally from top to bottom in the final pressure, the result being a brick of great density, entirely free from granulation and being as dense as brick made on any large power press, *all* the pressing is done with the large wooden lever. The brick are extracted from the mold with the small lever on the other side of the press, and there being only two levers to operate makes the press as simple as it is possible to build. Two men are required in the operation. One man in front of the machine, fills the mold by pulling out the charger and shoving it back in its place, he then drops the upper plunger into its place. The other man then pulls down the large lever until it is in a horizontal position. He then raises it, which also raises the upper plunger out of the mold and as soon as this is accomplished the man in front swings the upper plunger out of the way which allows the lever man to raise the lever and extract the brick from the mold, thus allowing the man in the front of the machine to place the brick on a truck. The operation is then repeated. Two men should make from 1000 to 1500 best quality plain or molded brick per day. On this press, brick on the flat or edge can be successfully made. The press has been thoroughly tested for making brick both from sand-lime and dry clay and is thoroughly guaranteed against breakages, it has been found utterly impossible to break any part of this press while in operation. For prices and further information write to Illinois Supply & Construction Co., St. Louis, Mo., whose ads appear on pages 20 and 21.



The Grath Hand Power Brick Press.

Written for The Clay-Worker.

THE BEAUMONT BRICK COMPANY.

THE PLANT of the Beaumont Brick Company of Beaumont, Texas, is one of the many manufacturing plants that has sprung into existence in the region recently developed so amazingly by the discovery of oil in that section of Texas. Oil, as is well known, is an admirable fuel for the burning of clay products, its cleanliness and convenience being important advantages here.

So it is not surprising that all through southern Texas the clay industries have received a strong stimulus since the use of oil as a fuel has been made practicable.

The plant of the Beaumont Brick Company is conveniently situated a mile or two out of the town. It has been in operation only a few years, but it is now making a great variety of oil-burned, dry-pressed brick. Its annual capacity is estimated at thirty million brick.

The officers of the company are Sam Park, president; Wm. F. Scott, vice-president; R. M. Hallowell, treasurer; M. F. Parker, secretary; D. Parke Bicking, superintendent, T. H. Comiskey, general manager.

These officers are said to be capable men who not only take an active part in the business, but devote much time to promoting the interests of clay work in general.

The company speaks most highly, in particular, of Mr. T. H. Comiskey, the capable manager, who, though a very young man, has gained, by his tireless energy and effective applications, the confidence of both his employers and his customers. He is ably assisted by Mr. W. A. Nichols, sales agent.

The company, in response to an inquiry as to business prospects in this part of the world, replies:

"The demand for brick at this season of the year is something remarkable, and the prospect of deep water to the gulf right from our plant means an additional call for this article. The United States government appreciates the facilities offered by the ports in this particular territory and the superior qualities Texas brick possesses, and we have no doubt but that quite a number of large contracts will be let here for Panama supplies."

In conclusion the company calls attention, not only to the excellent quality of its brick, but to its reputation for adhering strictly to contracts in all respects, so that it is rarely troubled with complaints. "Prompt shipments and strict adherence to business is our speciality," they say with pardonable pride, "and we find it produces satisfactory results and gains for us valuable patronage."

Ethel Hutson.

FIREPROOF BUILDINGS.

In a recent census of cities concerning fireproof buildings, collected by the New York Fire Insurance Exchange, St. Louis, was reported as having 190 structures of this character. Chicago has 298 and Boston 265. Cincinnati has only 51 and Indianapolis 10. Considering that the fireproof building has been made possible only since the introduction of steel frames and that this form has come into use only in the last fifteen years, the record seems impressive.

Written for The Clay-Worker.

ENCAUSTIC AND MOSAIC TILES.

The Most Artistic, Enduring and Sanitary Flooring of Modern Times.

Beautiful Designs for Vestibules, Hearths, Mantels and Wainscoting Made by the United States Encaustic Tile Works, Indianapolis.

THE STRANGER in Indianapolis comes to be amused at the invariable reply he receives whenever he complains about what the local newspapers are fond of alluding to as "the dense black." To all remarks about the smoke and soot which make the place a close rival to Pittsburg for griminess, he gets the unfailing answer: "Ah, but you should have seen Indianapolis when we had natural gas! Then it was a beautiful, clean city, no smoke anywhere." The regret for that "golden age," when gas, cheap, abundant, clean and convenient, supplied fuel and light and power for private and public uses, is certainly genuine. But regret will not bring back the wasted gas and though the exhaustion of the supply was a great misfortune to the city and its industries, yet it was not a crushing blow. Indianapolis lives, and grows in spite of its smothering veil of smoke. The industries which were nourished in their infancy on natural gas have learned to consume coal instead, and flourish under the new conditions as under the old, in spite of obvious disadvantages.

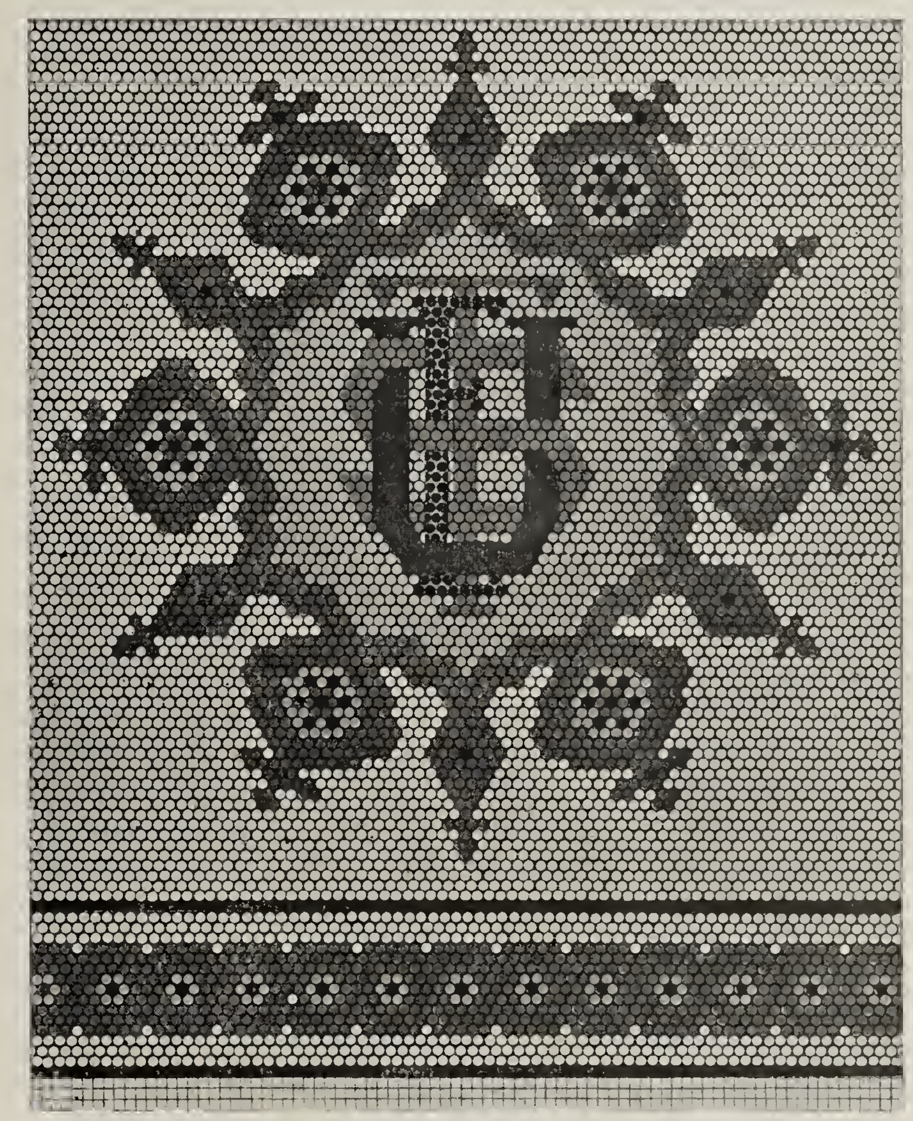
Only in one single factory is the gas still used as of old. The United States Encaustic Tile Works, founded in 1877, inspired by the Centennial of 1876, where the first exhibit of tile was made, was the first factory in the country to make use of gas for firing tile. To-day it still employs natural gas for this purpose. From its own wells, twenty of them, on various plots of land, leased from their owners, in Hamilton county, 25 miles away, the gas is pumped through its own pipe lines, by its own pumping plant near Fisher's Station. So the great kilns flame with a steady heat, such as best serves the purpose of the tile wright; and breakage and uneven shrinkage are reduced to a minimum.

What a fascinating sight these kilns are, with their core of raging heat—while the thick walls may be touched with the bare hand at any time! There is a strong appeal to the imagination, in the realization of the intense heat they hold so coolly; of the torrent of energy that must be pouring through them, enough to turn all this soft clay into a substance harder than stone. A kiln always has for me the same sort of attraction that a steam engine has. It is hard to convince oneself that it isn't alive, breathing, active; and the sight of these giant ovens at the Tile Works is a fascinating one. They each have a capacity of ten or twelve thousand feet of tile and it is interesting to watch them, some heating, some cooling, some emptying their finished contents into the packing rooms, some filling with fresh saggers full of raw tile.

Probably most of the readers of The Clay-Worker are familiar enough with the process of making tile for us to pass over that part with a brief survey.

Tiles are of so many kinds and are used for so many purposes, that the field is a big one. There are only four or five factories in the country that undertake the manufacture of all the kinds of floor and wall tile. Of these, the United States Encaustic Tile Works is one of the oldest and largest.

It covers about a block of land, and its present output is estimated at two million feet a year. Seven bisque kilns, each producing twelve thousand feet of tile in the unglazed state, and eighteen muffle kilns, which burn each about a thousand feet of the glazed, are in constant use. About 250 employes are necessary to handle this mass of material. Besides the labor needed to prepare and fire the clay, the finished product must be very carefully sorted, defective tile destroyed, "seconds" or "commercial" tile separated from the perfect or first quality, to be sold at a lower rate. This part of the work employs many women and girls, and they are also employed in the "paste" rooms, where the mosaic tile is mounted. It has to be mounted on paper in sheets to form the patterns which are shown in the catalogue or made for special orders by the designers upstairs. For this work, women's deft fingers are found most useful. Some of the most skilled of these workers are employed as assistants in executing cut ceramic, for which the demand has increased of late.


The Color Scheme of this Design is Worked out in White, Green, Buff, and Dark Brown, but may be Changed Ad Libitum.

The range of colors possible in this mosaic work, while limited as compared with the palette of the painter, is yet a very harmonious and sufficiently complete one. There are several soft greens, and some rich reds and browns, two blues, black, white, cream, buff, yellow, salmon, pink and grey. Thus almost any color scheme may be approximated, though the comparative strength of some tints, as the blues and reds, makes them dangerous unless handled with reserve. A piece of cut ceramic made by this firm for the N. O. Nelson Co., of St. Louis, took the Grand Prize at the Louisiana Purchase Exposition, and it was a good example of the success with which human and animal forms as well as floral effects can be rendered in tile.

Since the establishment of this factory, twenty-eight years ago, the business has seen many changes. In the early days the form of tile known as "Encaustic," was in great vogue. "Encaustic," meaning "burned in" was of course applicable to any form of decoration fixed by fire. But in the tile business usage has confined it to a certain kind of tile, the product of two or more clays of different colors, which has gone almost out of use, though the name "Encaustic" is still retained in the titles of the two largest tile works in the country. And in almost any public building, and in many private homes, built between 1880 and 1900, one may see examples of these encaustic tile. They were very durable, and it is probable that they will be revived before many years have passed; for, though the designs in use in the nineteenth century do not appeal to our taste as much as the simpler and more restful plain tile, yet it is quite possible that in artistic hands some good results might be obtained from the combination of clays in a single tile. I look to see, within the next quarter century, a revival of the encaustic tile in new and more aesthetic forms, which may partly supersede, though it will scarcely drive out, the ceramic mosaic now in vogue.

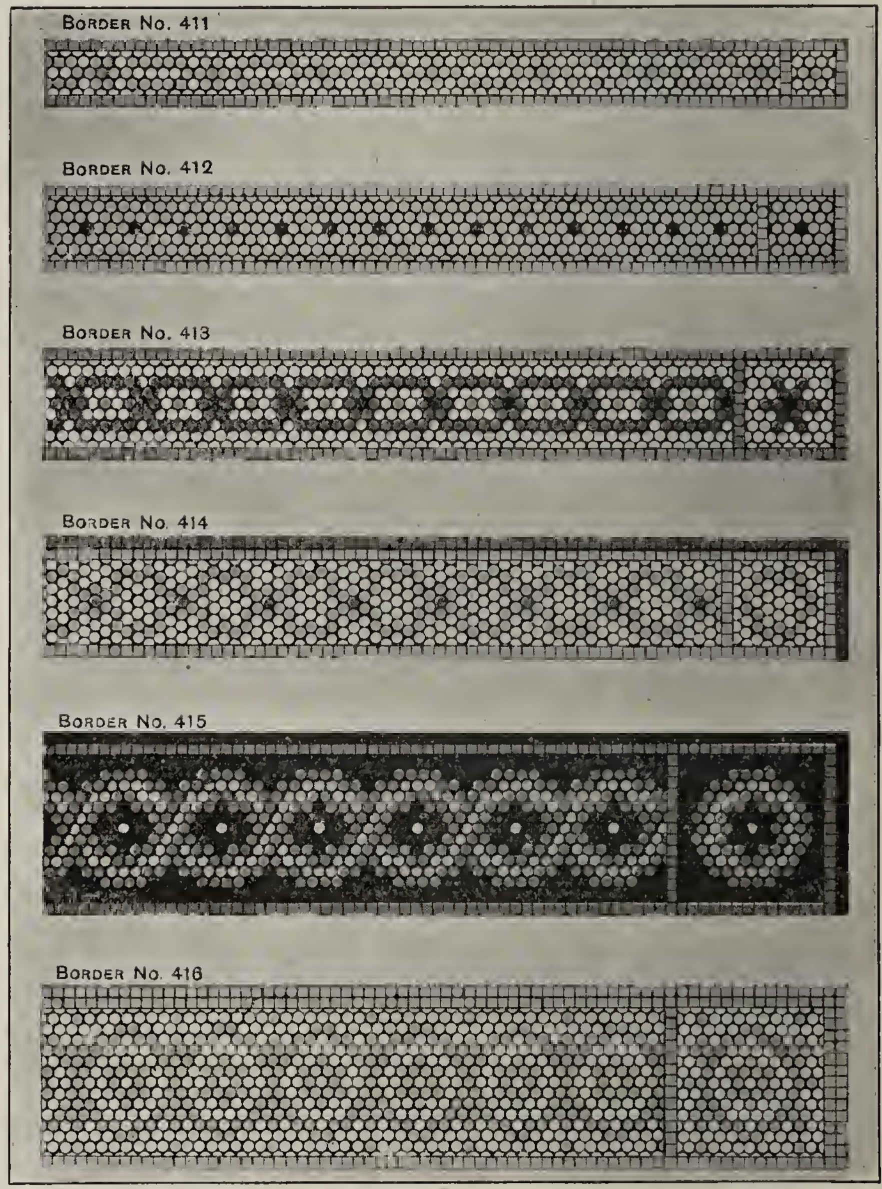
For this mosaic tile has its artistic possibilities, which are far from exhaustion yet. In fact, we have only just begun to learn to handle ceramic mosaic in the proper spirit. When it was introduced, some five years ago, it was an imitation of marble mosaic, which had begun to drive out the old encaustic tiling, because its greater artistic freedom appealed to people who were beginning to tire of the formality, the rigid sameness and set geometrical lines into which the repeated patterns of the large tiles arranged themselves. Undoubtedly, it was an aesthetic advance when owners and architects began to discard the wearisome conventionality of the tiles designed in the early '80's, the most hopelessly inartistic period of our past, as far as results were concerned,—the days of "bustles" and "jerseys" and "bangs" in womens' dress, and of similar abominations in architecture. Yet it was in these apparently unpromising days that our national art life first breathed and moved. We smile today at the things people made and admired twenty-five years ago, but future historians of American art and industry will collect the old red and buff clay tile, made of Indiana mud, as samples of the first tentative efforts at beautiful, durable and sanitary floors.

They were not beautiful but they were sanitary and durable; and in these points the marble mosaic could not equal them. For marble will wear under passing feet, into hollows that collect dust and filth, and will absorb moisture. Marble can be cut and gashed—but tile resists both wear and cutting, and is non-absorbent, to a degree that makes it the ideal flooring material for hospitals, hotels, stores, office buildings, kitchens, and bath rooms—in a word, wherever sanitary needs require a smooth and impervious surface.

Out of the conflict between the aesthetic qualities of the marble mosaic, and the practical advantages of the old large tile, came the compromise which the tile business today offers the architect, ceramic mosaic, made by small tesserae of tile, set in a bed of cement; not as a rule, singly like the old tile of larger size, but in sheets mounted at the factory on paper, to facilitate the tile-setter's work.

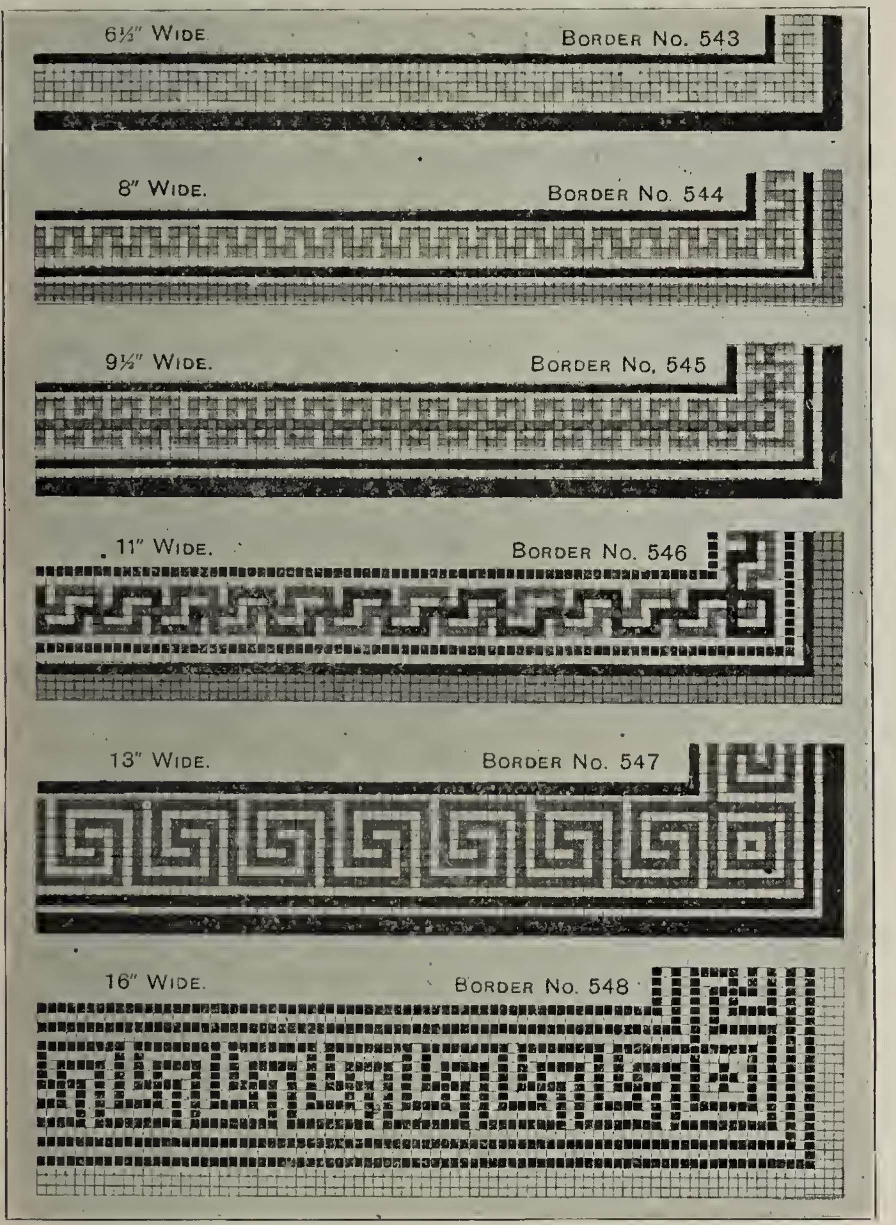
These tiles were at first made in the same geometrical forms, squares, circles, hexagons, octagons, and triangles, which had been used for tile from time immemorial, only they were made smaller, inch and ¾ inch dimensions, taking the place of those six and nine inch ones. And this geometrical mosaic is still the commonest form of tile mosaic, and is capable of great artistic development. I do not believe it will ever go out, for it is the style most truly in harmony with tile conditions. It needs only to be relieved from the somewhat formal conventional traditions which it inherits from the old encaustic tile, to make it abound in rich and elegant ornament. Already several of the leading tile factories have introduced designs whose boldness and freedom have begun a revolution in geometrical mosaic. Color is used more freely, form is less confined to the geometrical lines into which the tiles tend to bind the designer's fancy; spaces are more perfectly filled by the pattern, and the general trend is toward a richness and fullness of design which recall the beauties of oriental carpets. The design which we publish, one recently made by the chief designer of the United States Encaustic Tile Works, Mr. Charles D. Green, is an example of a design made in strict accord with traditional tile conditions, yet showing a sense of color relation at once suggestive of richness and refined restraint.

But geometrical mosaic design has been greatly modified and influenced by a greater development, which more closely imitates marble mosaic—"cut ceramic" or "art ceramic" as some factories less appropriately call it. This form of tile mosaic reaches out still further toward the freedom of marble mosaic, with its charming accidents of form and color. The tile, formed originally in bars about three inches by half an inch, by a quarter of an inch, are broken into shorter chips, out of which the design is made by careful arrangement on a pattern drawn or stenciled on paper. Curves can thus be followed, and an infinitely greater variety of forms introduced; while new shades of color allow some representation of light and shade, and modeling. So we find designs in cut ceramic attempting naturalistic treatment of flowers, garlands, scrolls, and even animal and human forms with considerable success. Some admirable work along this line has been done in the past year by the designer for the United States Encaustic Tile Works mentioned above, all of which will be shown in their new catalogue, from which the accompanying design was taken.



Decorative Borders in Round, Square and One Inch Hexagons of Various Colors.

We have been talking of floor tile, but there have been changes equally revolutionary in the glazed or wall tile. The most fundamental of these changes is the introduction of the dull or "mat" glazes. These have not by any means yet driven out the bright glazes, nor will they do so entirely, for there are places and purposes for which the shining surface is more suitable than the dull. But the liking for the soft restful tones and non-reflecting surface of the "mat glazes" is growing with the growth of the new movement for simplicity and harmony and restfulness in house decoration and furniture. If you use "mission furniture and "arts and crafts designs" in your home, you will want your hearths and facings, wainscoting and other tiling to wear the mat glazes. The variety of color now produced allows you to match or at any rate to harmonize your tiles with your papering and rugs. Soft greens and rich browns, blues and yellows, even deep reds, may be obtained in several shades; and new tints are constantly produced. I saw recently at the United States Encaustic Tile Works several new shades of green and of brown which had been added within the last two months. This factory produces a singularly beautiful brown, a rich and velvety tint, over which a lustrous net work of semi-metallic veining gives a play of light and shade most pleasing to the aesthetic sense. Three of the new shades are lighter variations on this, or rather, it is one shade applied to white, buff and terra-cotta bodies, with exquisitely pleasing results. These are called "leather browns."



A Series of Borders in Square Tiles, Each in a Variety of Colors.

Just now the demand is for tiles which will exhibit the characteristic beauties of the kiln, the accidental shadings and veinings, ebbing and flowing of color, which used to be considered flaws and blemishes, but are now sought after by connoisseurs, who know enough of craftsmanship to be aware that the greatest charm of pottery is in its caprice, the caprice that shows what the fire chose to do in its fierce play with the clay product. So these connoisseurs, among them some of the most cultivated women of Indianapolis, come to explore the shelves of the Tile Works for freaks of the kiln heretofore discarded.

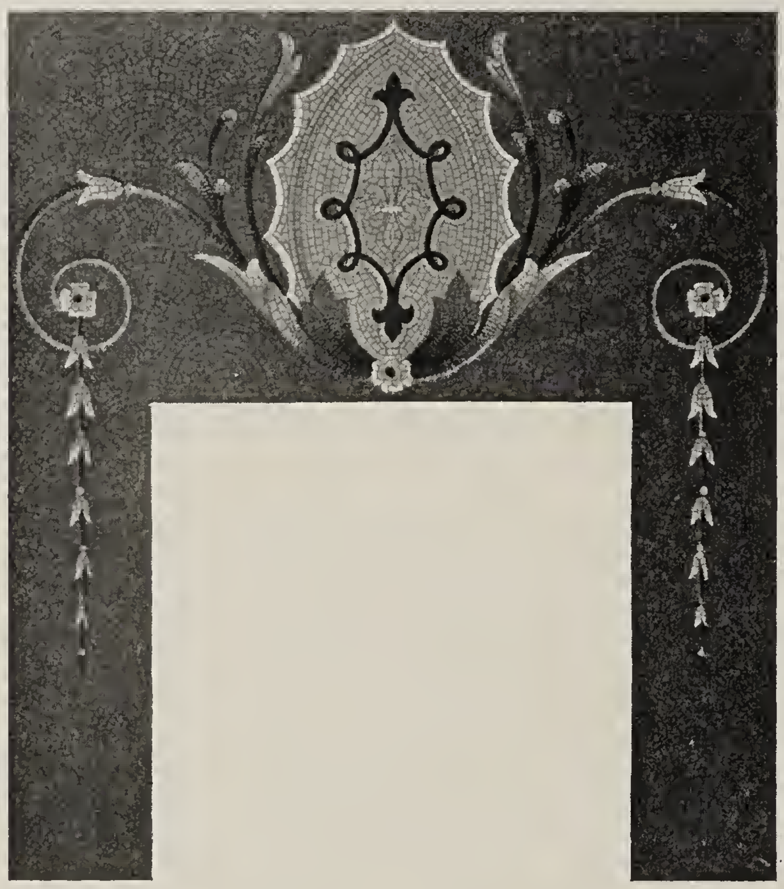
It was this factory, by the way, where about fifteen years ago, mat glazes were first produced on tile, producing "white slates" for children in the kindergarten; and later, at the desire of a prominent physician, who was an enthusiastic disciple of Ruskin, and wished to apply his then novel theories of aesthetics, furnished the white dull-glazed tile for the Surgical Institute, now the Hotel Imperial. But the taste of the American public had not then been educated up to the point of caring for dull glazes, which demand surroundings of a similar low tone, and of restrained and chaste design, to render their beautiful refinement effective.

As I have said, the United States Encaustic Tile Works is doing some excellent work now in these glazes, which are produced, not by any process of removing the shining glaze by the sand-blast or the application of acid, but by a choice of chemical constituents which gives a non-reflective surface most pleasing to the eye and to the touch, and possessing the practical advantage over other glazes, of not crazing from heat or the atmospheric conditions. This point has been as important in the success of the mat glazes as their undoubted aesthetic value, since the inevitable crazing of glazed tile has always been one of the most distracting problems of the tile-wright.

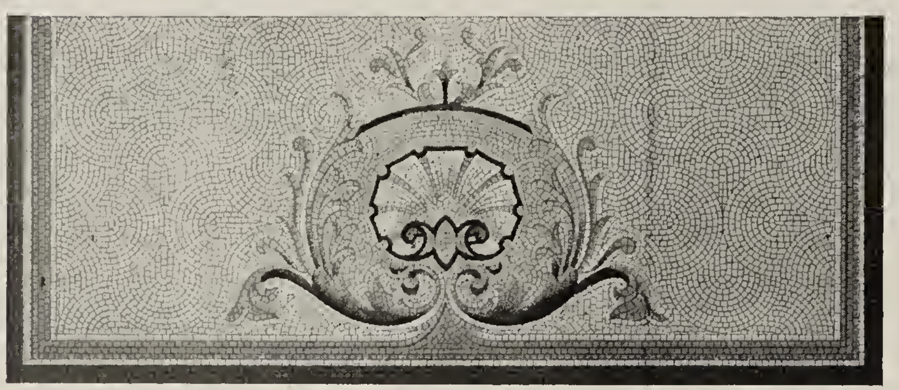
A notably successful attempt to produce a tile for a special position, to harmonize with certain colors in the wall and furniture was carried through recently by this factory, in the tile made here for the hearth and facing of a library in one of the most modern residences of Indianapolis. This house was designed by Gustave Stickley, of Syracuse, New York; and as in all Craftsman models, it was intended that each part should sound its fitting note in a harmonious whole. This library had walls of a somewhat tense blue, and all the woodwork was to be mahogany. It was necessary that the tile for the mantel and hearth should hold its own with sufficient richness and intensity in this daring color scheme, yet fall back into the shadows of the fire place with the proper restfulness, for a hearthstone should never be strenuous; and the colors of the tiles are so strong and effective that the utmost care is necessary to keep them from overbalancing the milder materials, wood and paint and textiles, which must surround them. It is seldom possible or desirable to match exactly in the tile, the paper or carpet of the room which is to hold both. Usually the tile should strike a deeper, lower note than the papering of the walls—should act as the accompanying bass in music. It is by no means easy to achieve, even after many trials, just the tone one has in mind, in a glaze. The potter's art is as full of capricious freaks as any woman—but sometimes she rewards her devotees with full and satisfying success. The blue tile of which I have spoken are an example of it. When they came from the kiln they were admirable for their sheer beauty of color and texture; but it is necessary to see them in place to realize that the note they strike there is just what it should be, effective yet not forced, rich and restrained.

Not alone in the houses of the wealthy do we find tile used freely nowadays to secure the cleanliness and sanitary conditions we have learned to demand as essential to civilized existence. In the modern sanitary tenements now under construction in New York and other large cities, it is found that economy and sanitary requirements may both be best met by a use of tile which a generation ago would have been thought lavish. That these sanitary tenements are found to be good paying investments is encouraging to the social reformer, and is considered in the tile business as one of the best of testimonials to the effective sanitary value of tile in the dwelling house.

The necessity of absolute sanitary surroundings in surgery has made it imperative that the operating rooms in sanitariums and hospitals be constructed of such materials as will insure these necessary conditions, and no material has yet been discovered that answers every requirement so perfectly as tile. The walls, ceilings, and floors can be finished with rounded corners at every angle, and being non-absorbent, no germs can find a home, no acids or stains affect it, and when any operation is over, the room can be flushed out with a hose and in five minutes be ready for use again. The conditions are not only applicable to operating rooms, but are coming to be recognized as essential in all parts of hospitals—such as the kitchens, closets, toilets, bath rooms, wards, butcher shops, florists establishments, etc., and the United States Encaustic Tile Works now have a complete line of special tiles, made for this work especially and with these ends in view.



Mosaic Mantel in Olive Green with Decorations in White, Pink, Brown and Blue.



Mosaic Hearth to Match the Ornamental Features of Above Mantel.

As examples of the foremost and highest class work, both from an artistic and sanitary point of view, as well as that of durability, we cite the new home of Andrew Carnegie, in New York City, which is tiled throughout, from cellar to garret, floors, walls and ceilings, including the kitchen, elevator shafts, bath rooms, toilets and including a swimming pool made of tile. The St. Regis Hotel, said to be the finest hotel in the world, has tile on floors, walls and ceilings, in the basement, kitchen and every single bath room, and every corner is rounded or curved, so that no sharp point or angle is seen at any place. Nearly every piece of tile in these buildings was made here in Indianapolis by the United States Encaustic Tile Works.

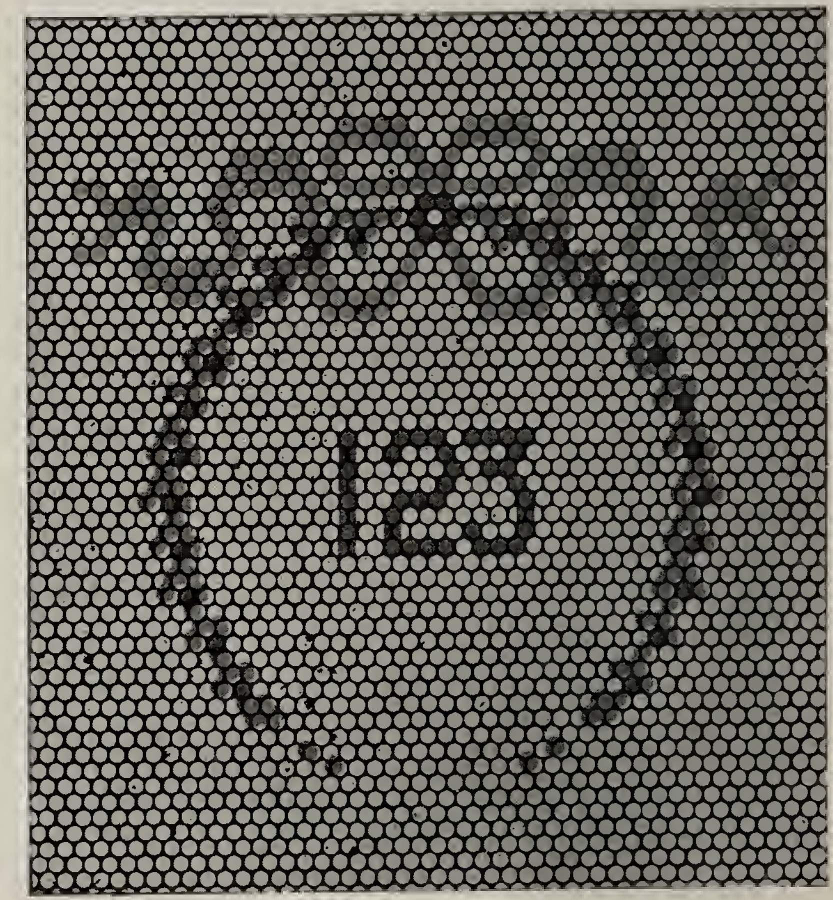
To show how far the goods of this factory go and how high a reputation they can bear abroad as well as at home, we mention the shipments recently made for the Palace of Prince Pu Lun at Pekin, China; the new Palace at Bombay, of that richest Mogul of India, Mr. Tata; the new opera house at Buenos Ayres, South Africa, and several car loads for modern structures at Sidney and Melbourne, Australia, including a considerable quantity for New Zealand.

Some three or four car loads were shipped quite recently to the Panama Canal zone for use in constructing hospitals and clubs for the officers and men who are to dig the Panama Canal.

From this you can see that this industry gathers the dust of the earth in the form of clay from all parts of the world here, presses it into shape, burns it into colors and designs both useful and decorative and redistributes it to every corner of the globe.

Ethel Hutson.

Design in Encaustic Tile, White, Brown and Slate Colors.



Circular Mosaic Flooring in White, Buff and Pink Colors.

HE'S A "WONDER" AND NO MISTIX.

A man with the queer name of Hix,
Sells machinery for making clay brix.
When he puts in a yard,
You can just tell your pard
He can bet his last dollar it stix.

He sent a plant out to Des Moines,
And came back home with des coines.
Buy one of his plants,
You can wear tailored pants,
And eat the best steak in des loines.—F. A. Stare.

Written for The Clay-Worker.

BRICKMAKING IN MAINE.

THE PROSPECT FOR BRICKMAKING in Maine brightens up as the days grow colder. The New Year gives promise of wonderful developments along that line in Maine. The price of lumber has reached as high as $28.00 per thousand for dimension stuff and the cost of the reinforced cement work is so high that one might safely say there is room for brick buildings yet. The Junction of the new Searsport Railroad with the Canadian Pacific, at Milo, together with other industrial plans not yet fully developed, promises a market for brick building here. From Milo Junction to Milo Village, a distance of one mile and a half, every inch of land has been sold for house lots and already business streets are planned. In the residential section the houses go in the hundreds, each one made in such a substantial nature, giving testimony of the faith of its construction in the possibilities of the place. Besides this, the proposed Branch of the Aristook Railroad to skirt the Chamberlain Lake Lumber Regions and terminate near the famous Allegash Falls, promises more chance for brick chimneys, etc.

Every brick that was manufactured in Penobscot County last season has already been sold, three times as many could have been sold if they had been manufactured. Hannah Brothers, who operated a small brick yard at West Sullivan, are new beginners. They made two small kilns, and so well pleased are they with the result of the season's work that plans are being made by them to manufacture on a more extensive scale next season.

At Frankfort, about nine miles from Stockton Springs, the terminus of the new railroad, preparations are made for development of the water power of Marsh Stream. Five concrete dams have been planned between the towns of Frankfort, Monroe, Jackson, and Newburgh and the flowage rights have already been secured.

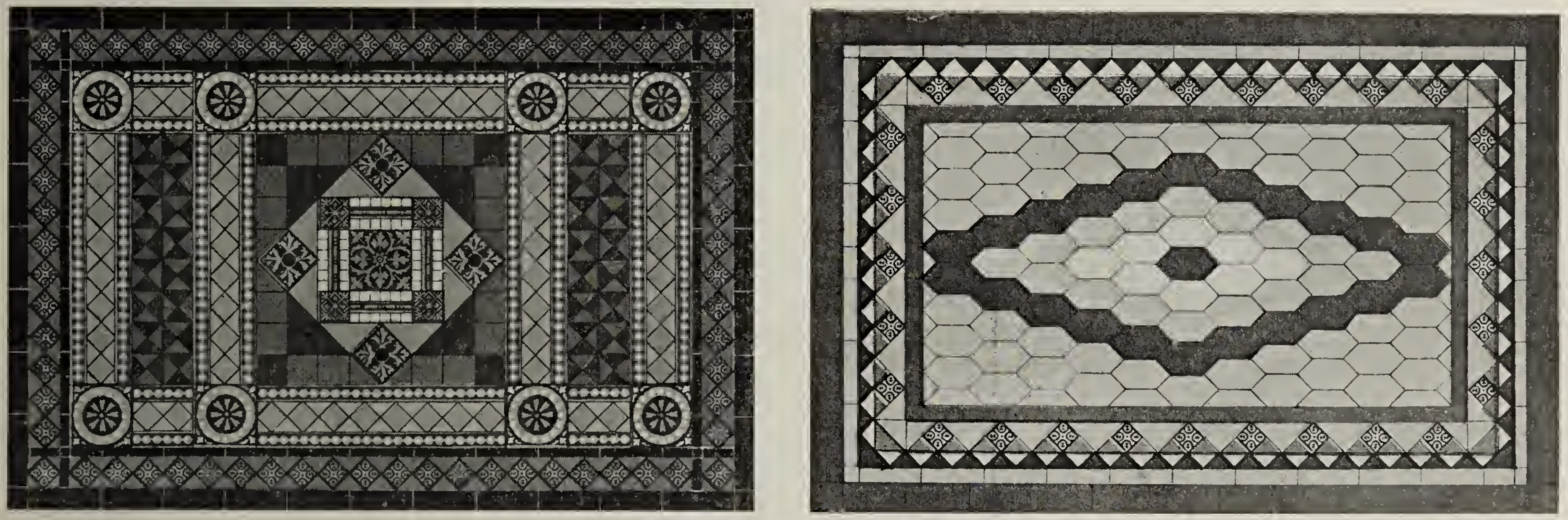
It is reported that Governor Cobb, of Maine, in company with capitalist Thomas F. Ryan, of New York, and others are to create electrical force at the lower dam. Close by the base of the fall on a beautiful knoll overlooking the bay and in the center of the village, the Very Rev. James Gerrity has purchased a site for the erection of a new Catholic Cathedral. This structure will, doubtless, be made of stone, as the Mt. Waldo and Mosquito Granite Works are within sight and have headquarters here.

There are rumors of various factories, the truth of which may be substantiated by the fact that already one of the large dams has been completed and a new hotel has been built.

Another indication that would seem to encourage the manufacture of a large quantity of bricks, is the fact that at Stockton Springs, the terminus of the new Searsport Railroad, is to have some business buildings which will be, doubtless, made from bricks manufactured on the spot.

The Brewer brickmakers have diminished to only three and are making a few million per year. During the early fall, a few Boston men had interested themselves to some extent with regard to the establishing of a modern brick factory on Soudastacook Stream, in the town of Hampden, four miles below Bangor. This stream runs from Hermon Pond, a distance of six miles to the city, crossing the Aroostook Searsport Railroad, about one mile and a half from tide water and about one half mile from tide water, the high bank on either side of this stream comes together within a distance of one hundred feet. The stretch of the proposed dam is intended to cause a back flow making a pond to the railroad bridge.

Between this proposed dam on the river is the site for the plant. The clay is of the very finest quality of gray bar clay and is suitable for the manufacturing of fancy, red bricks and terra cotta work. The power also to be utilized for light and water supply for the town. With the new railroad and easy access to the river, this will give to the new enterprises a valuable outlet to the markets of the world.



Encaustic Tile in Various Colors. The Pattern and Colors Can be Changed to Suit Surrounding Decorations.

The factory will not be confined either to the city or state, on account of the connection which is sure to take place between the Canadian Pacific Railroad and the new Searsport Railroad.

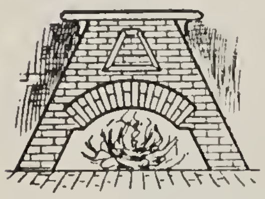
Mr. Hinckley, a Boston attorney, is one of the interested parties. The Columbia Falls brick plants which were established on so gigantic a scale some 15 years ago, have been shut down of late; but not on account of a lack of clay of proper quality nor because of the slackness in the market. The United States Government gave preference for the product from this yard some years ago, in the construction of some of its govermental postoffice work on account of the clear, red color. Its location for water shipping is unsurpassed, as the bricks can be taken directly from the kiln to the deck of the vessel on wheelbarrows.

Another such deposit is at Larabee, Maine. It was reported here last year that A. D. McFall, Esq., of Machios, author of "Ike Glidden in Maine," was to establish a plant for the manufacture of bricks. A new brick yard was established at Guilford, Maine, last summer and there is talk of establishing another one at East Dover, Maine.

At Joel Clark's yard, at New Limerick, about one million bricks were made this season all of which have been sold.

In Bangor the new concrete car barn is complete, judging from the amount of lumber necessary to hold things together, it cannot outdo old brick.

NEW YORK AND THE EAST.



ACTIVITY IN THE manufacturing centers is about over for the season. A few yards are closing up their burnings as this is written, (December 21) but the bulk of them are done for this year. And a very good year they have had of it, too. Prices have ruled high and the market has been strong all the season. The year opened with an unprecedented demand, and it hasn't been satisfied during the season. All consuming interests have continued to buy liberally, and the year closes with them still buying liberally. The market as this is written is so strong about New York, that Hudson river brick have risen another 50 cents per ton, and are now selling at $9.50 per thousand. Pale and light grades are also selling liberally at former figures. Fire bricks are in steady demand, both domestic and Scotch, continuing firm at quotations. Front brick are in fair demand and bring full previous quotations. Prices as quoted are: Front, buff No. 1, $26.00, @ 28.00; grays, shaded and speckled, $28.00, @ $33.00; white No. 1, $30.00 @ 32.00; Hudson river common, $11.00; light, hard, $9.00 @ $9.50; pale, $7.00; No. 1 fire, American, $25.00; No. 2, $20.00; Scotch, $35.00.

Along the Hackensack river a few yards are still burning, but as a rule, the yards are clear and the burning sheds are quiet for the season. The year has been prosperous beyond all expectations and business has remained better than was anticipated or than the most sanguine dared hope at the opening. All through the year there has been a steady demand and prices have remained steady. The season opened at high values, and common brick have brought the highest prices in years all through the active season. Since making slowed up, due to the approach of winter, prices have advanced, and it is now possible to sell common brick at as much as $10.00 per thousand. It may be noted that they have sold within the past two or three years as low as $3.00, consequently the difference in price seems all the larger by comparison. Practically all the yards are cleaned up at the close. They have been shipping immense quantities during the past month, but that has practically ceased, and the small quantities now remaining will be retained for the early spring shipments, which will go out as soon as navigation opens next spring. It hasn't closed yet, however. For a month longer than usual shippers have been able to send their schooners to New York and now, almost Christmas, the river hasn't a vestige of ice in it. The importance of this favorable condition cannot be overestimated. It is responsible for a considerable enlargement of profits and has also been responsible for continued active sales throughout November, and so far in December. Naturally, however, building operations are much less active at this season and the demand for brick is not so brisk.

One manufacturer says that he has made nearly enough to make good all his losses for the past several years, and declares that with one more season like the one just closed, the prospect of increased profits makes him wish he owned several yards instead of one. Another thing is interesting. When prices were down and profits were small, or were wiped out entirely where now there is a good margin, there was a talk of abandoning some of the yards along the Hackensack, because of the expense incurred in working them. That is to say, the clay must be taken from pits deep down in the earth, which means hoisting in some manner and that is expensive. Then, too, most of the pits are below the level of the river, which necessitates the installation of expensive pumping plants and that has been discouraging. But now there is nothing like that heard. Every manufacturer is well satisfied with his situation and will attempt to increase his output during the coming year. The total product along the Hackensack, and Hackensack, Ridgefield Park and Little Ferry will probably aggregate 25,000,000 this year, which is something like 10,000,000 increase as compared with some of the lean years which have gone before. If prosperity continues for another season or two, it is safe to assume that there will be a still further increase in the product and perhaps some additions will be made to some of the plants.

There is no limit to the resources. Clay of excellent quality is abundant and limitless supplies of sand are near at hand for tempering. But the expense of hoisting from the pits, which is done by means of hauling up inclined planes with horses, has been so great that makers have figured that it consumed substantially all the profits and they have felt like abandoning the making here to reestablish themselves elsewhere under conditions that would be more favorable, so far as procuring the supply of raw material is concerned. Apparently it is safe to say that there will be no reduction in the number of plants along the Hackensack, nor any reduction in the output under present favorable conditions.

Work along the Hudson river has ceased for the season. As far south as Poughkeepsie the river is frozen and at last accounts several boats were stuck in the ice. It was not stated that any brick barges or schooners are among the imprisoned craft, but the freezing of the river has stopped navigation for all sorts of boats, consequently the brick barges and schooners have made their last trip of this season. It is said that the prosperity among the Hudson this season will stimulate the construction of new works or the enlargement of the old ones for the coming season. Nothing definite is known about these propositions, but demand for brick has grown so rapidly during the past season and the outlook is so promising that the proprietors of several successful plants are reported as contemplating enlargements or expansion. A number of new concerns have been incorporated under the stimulus of improved business conditions, one or two at Albany, N. Y., and that undoubtedly means new plants or purchase and expansion of old ones. The average brick yard on the Hudson closes the year with practically no stock on hand, with the possible exception of the small quantity left for the early spring demand. This is a different condition from what has prevailed for the past three or four years, and it points to increased profits for substantially all manufacturers. As a matter of fact none of the makers deny that they have done unusually well this year. They say that business has been uniformally good and they point to the recent advance in the prices of common brick as indicative of the position in which they find themselves at the end of 1905.

The agitation of the sand-lime brick development and the reports from several companies which are engaged in their manufacture had caused more or less discontent along the Hudson previous to this season. There was talk of abandonment in a number of cases, and it is true that several plants were virtually abandoned up to this year, but the increase in demand and the improvement in the brick business generally led to a change. Nearly all manufacturers are now ready to abide by the conditions which exist as long as there is any indication of profitable operation of yards. There is every reason to expect similar profitable business the coming year. Building operations will be of liberal proportions and there is every probability that sales will be even larger the coming year than they have been the past year. The market for good brick will steadily increase, according to the view of the most successful makers, and they confidently expect a business next year which will be even larger and better than the year's trade just past has been. Property in brick yards along the Hudson has increased in value measurably during 1905, and it would be difficult to get attention from owners for a sale of their plants unless high prices were paid. Two years ago they could have been bought for almost nothing. Such is the result of one year of excessive prosperity.

From Connecticut comes encouraging reports of the industry for the past year. The market for brick has been active and the year closes with the yards practically bare of stock. The outlook for the coming year is quite as promising. Building operations have been upon a liberal scale and contracts have been placed for similar operations next year, which will eclipse those that have passed this year. The different manufacturers who have profited by the successful year just closed are disposed to increase the capacity of their plants and to put their business upon a better basis. The home market for Connecticut brick is active. All the cities of Connecticut are growing and brick is being extensively used in the construction of the new buildings. There has never been a time when so much was used, and according to present appearances, there will be a still further improvement in demand in the future. The works at New Britain will probably be doubled before the next season opens. Others are discussing the advisability of doing so, but have arrived at no definite conclusion.

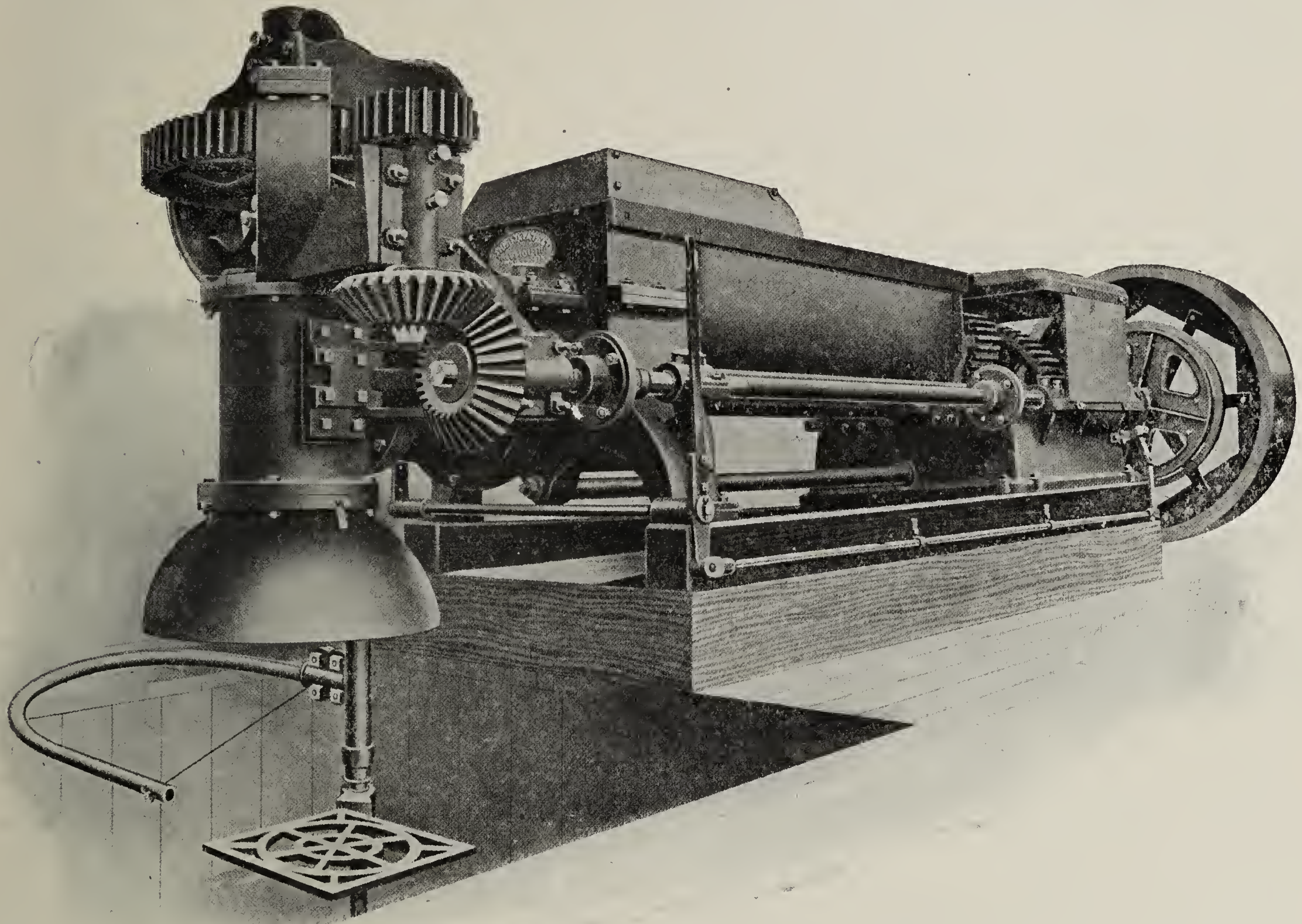
Burton.

It is not the bookkeeper's fault, but it is a fact, just the same, that the one that can show the biggest profit on his books at the end of the year has his salary paid more cheerfully than the one that can barely make them come out even.

A VERTICAL DELIVERY TILE MILL.

For a number of years prior to his death, the late John D. Fate, realizing the coming demand for tile of a large size and knowing the difficulties under which the tilemaker labored in trying to produce them with the horizontal machine, he determined to produce a machine that would deliver the tile vertically, the same as is done by the sewer pipe press.

The way was long and hard, full of trials and many failures and there were more thorns than roses, but with his characteristic perseverance he tried again and again; first with the plain elbow, then with a geared attachment driven first with a sprocket chain and later with a chain of gears; and this latter method seemed to have solved the problem fairly well. He still had hopes for something better but never saw them realized.



Improved Vertical Delivery Machine for Large Tile, Manufactured by The J. D. Fate Co., Plymouth, Ohio.

Since his death the company, of which he was at the head, has carried out his ideas until they are able to present to the clayworking fraternity the machine illustrated with this article, and a careful examination of this attachment will convince any tile man that there is not much more to be desired in the way of a machine designed for the molding of large drain tile and delivering them vertically onto pallets in perfect condition.

The J. D. Fate Company, of Plymouth, Ohio, who are the builders of this machine, will be pleased to give full information in regard to this machine or any other machine in their line.

Coal Briquettes for Kilns.—H. Gumpert states his experience with this kind of fuel for firing kilns; he found that his first failures were due to the kiln burners. After he made a change in burners, he obtained better results. He states that better and more uniform colors are obtained and that the kilns burn more even. On 1,000 brick he used formerly 180 kilos coal which cost him Mark 3.06, while now on 1,000 bricks he uses 225 kilos briquettes which cost Mark 2.25. The clay burns light yellow buff, and the finishing temperature is between cones 6 and 8.—*Tonind. Z. No. 140. 1905.*

Electricity in Potteries.—In the pottery district of England, the application of electricity in the factories is being introduced more and more. It has been demonstrated that by the use of small motors in the different departments, that the cost of production is materially reduced, and that the convenience of electric power is much more desirable than first thought. In the district of Hanley, Stoke and Burslem, companies have been formed which will act as general distributors of electric power and it will be only a matter of short time that steam power will be eliminated from the pottery districts.—*Le Mois Scientifique. No. 73. 1905.*

Bricks Made in the Thirteenth Century.—In Switzerland has been found recently, remains of old buildings which were erected in the thirteenth and fifteenth century, and bricks found have been indentified as having been made in about the same time. Some of these bricks are highly decorated with various ornaments which are of the same character as the style of those centuries. While being exposed to the atmosphere for more than six centuries, the high state of preservation of these bricks, point to the fact that burnt clay materials have made an excellent record, and have stood the test of ages.—*Thonwarenfabrikant. No. 21. 1905.*

Sand-Lime Roofing Tiles.—The manufacturing of sand-lime roofing tiles has so far not made very much headway in Germany. A few factories have made such tiles as far back as 1898, but only very few new factories have been erected and put in operation. The main cause why such roofing tiles have not been made in larger quantities is found in the fact that the opposition to sand-lime bricks was so great in the start that nearly every manufacturer did not want to risk his capital to introduce roofing tiles made of sand-lime besides his regular product.—*Tonindust. Z. No. 132. 1905.*

The Chemical and Physical Properties of Kaolins and Clays.—In a series of articles on this subject, Mr. Carl Loeser reviews the works done by Seger, and others, and adds his views and objections at the same time. He concludes the articles with the following observations. The value of a chemical analysis, which is very important as a foundation for further investigation, by itself, is not very great for the determination of the value of the clay. The mechanical or washing analysis only gives us a direct idea as to the ingredients of the clay, without it has much connection with a chemical analysis; while the rational analysis gives us many valuable points, especially by the examination of certain classes of clays, though the results are not very satisfactory when the rational analysis is applied to each and every clay.

In this connection the name "clay substance" is rather disappointing in as much as in the more impure clays it takes in all the impurities of the clays, and therefore it can only be used in clays in which the amount of impurities is very small, and a rational analysis has only value for the better grade of white-burning clays and kaolins. Loeser regrets the fact that so far it has not been possible to devise a way by which we could obtain better results for those clays which vitrify at low heat, and in which the impurities play an important part, and thinks that we could come to quicker conclusions in the examination of such clays by adopting the processes in use in mineralogy and petrography.—*Keram Rundschau, Nos. 43-48. 1905.*

International Exposition of Ceramics.—From June till October, 1906, there will be held in Paris an exposition for the building and art Ceramics. The exhibits are divided in twelve groups: 1st, raw materials; 2d, machinery, tools, kilns and industrial fire boxes; 3rd, building Ceramics; 4th, table ware; 5th, art ware; 6th, cut and plain glass; 7th, clay porcelain and glassware for scientific purposes; 8th, art and plain enamels; 9th, Ceramics of the architect and decorator; 10th, literature; 11th, educational Ceramics and Ceramic schools; 12th, exhibits of old Ceramic ware. Mr. Ch. Biny, Paris, Rue Saint Roch, is secretary of the exposition.

Pressed Brick Fronts.—In a very interesting article, J. von Buek, of Vienna, reviews the different materials used in buildings in the different countries of the world. He states that in nearly every country no direct efforts have been made in order to keep the fronts of buildings clean, with the only exception of the Netherlands. There it is customary to wash the fronts of the houses every week with water, and the cleanliness of the cities and villages is appreciated by every one. The dirty fronts of the American buildings come in for their share of the criticism. In order to clean a building properly he advised the use of hot water with about 15 per cent. of fine sand, and to apply to the buildings either with a brush or compressed air apparatus. *Deut. Topf. Z. and Z. Nos. 94-96. 1905.*

The 25th Anniversary of the Sand-Lime Brick Industry.—The invention from which the sand-lime brick industry has taken its impulse, dates back to October 5th, 1880, when Dr. Wilhelm Michaelis, of Berlin, applied for a patent in regard to the invention of obtaining artificial stone by high steam pressure with a mixture of sand and lime or barytes or strontium hydrate at a temperature between 130 and 300 degrees. The patent was not renewed after three years as at that time the invention was not explored, and no industry was started, but at the same time the invention became thereby public property, and there can be no claim that the sand-lime brick of to-day is a patented process. It is estimated that to-day we have between 350 and 400 factories distributed through the world with an annual production of 1,500 million bricks.—*Tonind. Z. No. 141. 1905.*

Terra Cotta Clays and Bodies.—The best clays used for the manufacturing of terra cotta are those which burn with a good clear color, they should be plastic, and at a temperature which is not too high burn to a fairly close body. For art and ornamental terra cotta, the clay should be ground wet and should be used without any additions. For building terra cotta the clay should be used with grog. The temperature at which terra cotta is fired is different in the various localities and ranges from cone .08 up to cone 7. The colors which are used in connection with the ships are either the metallic oxides alone, or frits made from the same. Cobalt, nickel, chrome, manganese, and others are principally used. The best glazes used for terra cotta are those which contain oxide of tin, as they will give the glaze an opaque character, and shield the defects of the bodies as far as color and shade is concerned. The best kiln for terra cotta is the downdraft muffle kiln as it gives more uniform product than the direct downdraft kiln. —*Keram Rundschau, No. 45. 1905.*

Written for The Clay-Worker.

THE GREAT WALL OF CHINA.

A Remarkable Piece of Brick Work that has Stood the Ravages of Time for Many Centuries and Deserves to be Classed among the Wonders of the World.

OF ALL THE strange things in that strange heathen land, the Chinese Wall is the most remarkable. "China abounds in great walls," remarks a newspaper correspondent: "Walled country, walled cities, walled villages, walled palaces and temples—wall after wall and wall within wall, but the greatest wall of all is the great wall of China." It is twelve hundred miles long, and is forty feet thick at the base and twenty-five to forty feet high. It is wide enough at the top to serve as an ordinary roadway. An engineer after inspecting a large portion of the wall gave it as his opinion that the cost of same, figuring labor at the rate prevailing in this country would more than equal the cost of all the one hundred thousand miles of railroads in the United States. The material it contains would build a wall two feet thick and six feet high straight around the globe. Yet, it is claimed it was built in only twenty years without incurring debt or issuing bond. The same engineer said of it "It is the greatest individual labor the world has even known. Twelve hundred miles of this gigantic work built on the rugged craggy mountain tops, vaulting over gorges, spanning wild streams, netting the river archways with hugh hard bars of copper; with double gates and swinging doors and bars set thick with iron armor, a wonder in the world, before which the old-time classic Seven Wonders, all gone now, save the great pryamids, were toys. One has a funny feeling akin to awe, standing on this vast work, scrutinizing its old masonry, its queer old cannon, and ambitious sweep along the mountain crest."

A resident of the city of Brotherly Love, who has visited China, gives us the following interesting story of this, the greatest piece of brick work of which the world has knowledge: The Great Wall was built by the ruler, Che Huang-te, one of the greatest rulers China ever had. He succeeded his father (Chang-seang Wang) in the year 246 B. C., when but thirteen years of age.

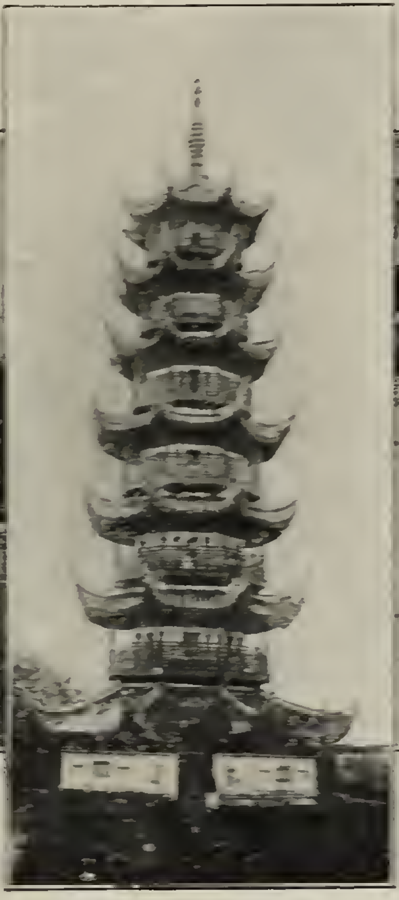
After constructing fine roads through the empire, forming great canals as a means of transporting goods, building many handsome public buildings, thus settling the internal affairs of the kingdom, he turned his attention to the enemies beyond the frontier. Once he marched against the Heung-mi Tartars and completely routed them, exterminating those in the neighborhood of China, and driving the others into the mountains of Mongolia. Immediately after this trouble was settled he had to face a rebellion in Honan. In this affair he was also successful. But these invasions set him to thinking, and he decided to build a wall along the northern frontier of his kingdom, thus shutting out the enemy.

Exactly in what years the Wall was built, I cannot say, but as Che-Huang-te reigned from 246 B. C., to 210 B. C., and it required a million men twenty years to construct it, some idea of the date might be gleaned from that. The wall is built of brick varying in size. The one we have is one of the smaller ones, although possibly not the smallest. Ours is three and one half by seven and one half by fifteen and one half inches in dimension and weighs about twenty-seven or twenty-eight pounds. Some are very much larger, weighing perhaps a hundred pounds and there are various sizes between. You ask if the brick are red. No, they are a kind of gray mixed with various shading, are unglazed, very hard, have a peculiar glassy ring, when struck, and have no marks on them that I can find. They are set in some kind of a hard, white cement or plaster, a half inch thick, some of which adheres to the brick. When I pass my hand over that brick and cement and think of the years it has seen, the changes that have come since then, away before the time of Christ, I am filled with awe. The ancient posesses great charm for me, particularly things of China, and things Chinese.

The wall varies in height, depending on location, being high, fully forty feet, in the valleys, whereas when running along the top of a mountain, as it does at some places, it is not more than twenty feet high. I do not remember its width at the base, but on the top, inside the raised outer edges and parapets, it is wide enough for four teams (horses and wagons) to drive abreast. And on this sort of road the

Scenes in Walled China

Tower and Fort at the Entrance of Yang-Tse-Kiang, a Suburb of Shanghai.



Temple in Shanghai.

Before and After the War

A Street Scene in the City of Pekin After the Bombardment.

A Part of the Wall Around the City of Seoul, Korea.

An Entrance Through the Great Wall of China.

dirt has accumulated and wild grasses and flowers grow. I have a flower that was plucked from the wall, another from the Tartar Wall, at Pekin.

As to the number of brick in the wall, one can scarcely form an idea, owing to their irregular size and the varying height of the wall, which extends from the sea at Shanghai-Quan, along are entire northern boundary of the Empire.

E. B. G.

Written for The Clay-Worker.

A LIVE ISSUE.

A Talk On Advertising Vitrified Brick.

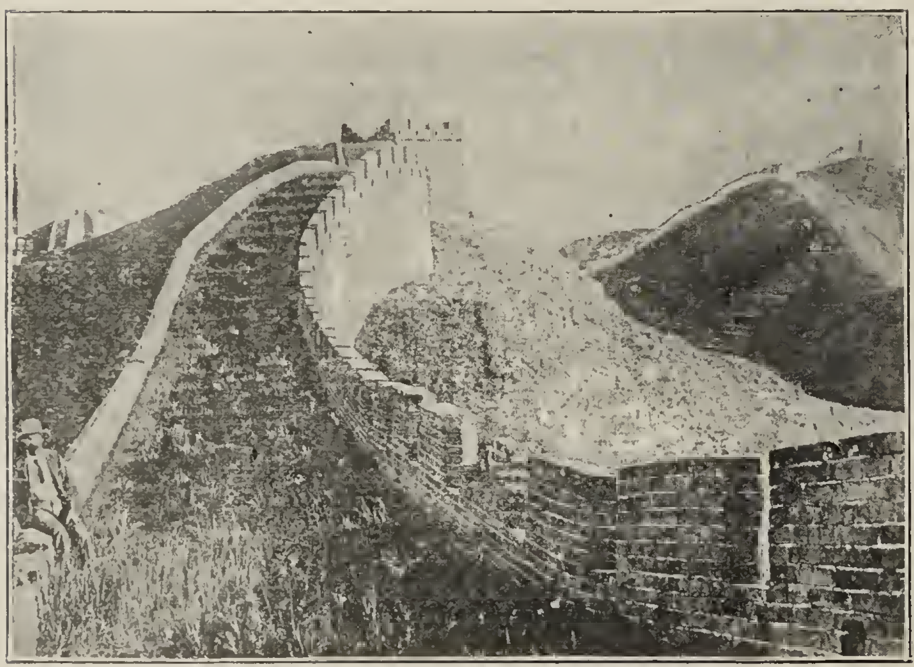
The VERY REMARKABLE growth which this country has had during the past few years has forced upon the brickmaker the adoption of modern business methods. It is in the process of manufacture that this is most evident. No device which will enable the brickmaker to get out a larger production or a better one is let go by without notice. It is safe to say that the large brick factories compare favorably with those of any other producers as to modern methods. However, when we come to examine the sales end of the brick business we notice that one factor which is prominent in other business is almost entirely neglected. This is the advertising of the production.

Doubtless to the average brickmaker the subject of advertising seems to be one to pass over without much thought. Brick have been a standard building material for so long that to put their merits before the public seems to be as useless as it would be to urge upon a Yankee the merits of baked beans as an article of diet. But let not those interested in the sale of vitrified brick turn from the subject of advertising without giving it fair consideration.

Looking at the subject from a common sense point of view, the first question is: Is there need of advertising on a more extended scale than that now used? If there is, what system shall be used, and what means adopted to carry out the system?

Is there any need of advertising the uses and merits of vitrified brick? The ideas which the average man entertains regarding brick are exceedingly vague. The chances are that when you mention brick he thinks of an article two by four by eight inches in dimensions, red in color, and which makes a good thing on which to scour the kitchen knives. To him, "brickyard" means a horse going around a mud hole and bare-foot boys placing the newly molded brick in the sun to dry. This average man can tell, with fair accuracy, how steel is made or how glass is blown or how rails are rolled or cement is made, but when it comes to brick his notions are about twenty years behind the times.

While it concerns the brickmaker only in a general way that people are not informed how he makes brick, it does concern him very vitally that the same ignorance exists in regard to the uses and value of his product. Particularly, does it concern him that this ignorance exists to a greater or less degree, not only among the public in general, but



The Wall Extending "Over Hill Tops and Far Away."

A Portion of the Great Wall of China.

among builders, architects and engineers. The reason for this lack of knowledge concerning vitrified brick is due in a large measure to the lack of advertising.

Vitrified brick, using the term as it is now generally understood among brickmakers, is a comparatively new product—so new, in fact, in many parts of the country, that many architects, contractors and engineers are not aware of the variety of uses to which the vitrified brick can be put. It is but recently that we heard an engineer, who was building a large gas plant, lament the fact that he did not know of the great crushing strength of vitrified brick before he drew his plans. He ordered vitrified brick, because of their impervious qualities, with which to face the walls, and upon receiving them, was so impressed with their other qualities that he would have used them for all purposes had he known what they were before the building was under way.

Certainly the intrinsic merits of vitrified brick and the variety of ways in which they may be used, deserve the notice of all builders. What makes a more handsome wall than vitrified brick of red or brown? Certainly nothing can compare to them for durability or strength. The street properly paved with vitrified brick has yet to be excelled for wear, appearance and price. They are suitable for nearly every class of engineering work—bridges, culverts, sewers, tunnels, retaining walls, foundations—in fact every place where strength, imperviousness, and good appearance is needed. These qualities are without question, of sufficient merit to deserve the attention which can be obtained by advertising.

An Ancient Chinese Cannon Taken from the Great Wall.

In the engineering field, which is open to vitrified brick, is a serious competitor in the shape of concrete. This competitor is backed by merit and advertising, and its presence has been felt even in these prosperous days, when it seems that the supply of building material is hardly equal to the demand. It is not our purpose to discuss the relative merits of brick and concrete, but as every candid brickmaker will admit, concrete has many merits and is coming more and more an opponent against which he must fortify himself. If he does not wish to cut the price of his product, let the brickmaker inform people of the good qualities which his product possesses, and having done so, trust to the product to back his statements and to maintain its place as the best building material.

Beside the above reasons for advertising, there still remains an important one to be considered. Dull times are bound to come sooner or later and the article which is not prominent in the mind of the public is the one which will suffer the most. Keep the people who use building material constantly in mind of the facts concerning brick, and when dull times do come there will be less cutting of prices and wages, less shutting down of factories, and fewer gray hairs among the managers' locks. A little money spent now for advertising is a good way to establish a reserve to be drawn on when building is not quite so brisk.

Studying the question: "Is there need of further advertising"—we are most impressed by the lack of knowledge concerning vitrified brick, the qualities of the brick which are prominent, the competition of concrete and the need to look ahead to dull times. Now no one will deny that there is need to disseminate knowledge concerning vitrified brick, and we believe it can be shown that advertising will do this and will also help to meet the competition of concrete and relieve the stress of dull times. This brings us to the second question: What system shall be used to advertise brick?

There are many ways to advertise—good ways and bad ways, honest ways and dishonest ways. Some people advertise in ways which they do not care to have made public, and some advertise their material by throwing mud at the material of the other fellow. Neither of these ways is advisable or necessary. The one keeps one looking toward the penitentiary, and the other reminds us of the young deputy who went in search of a desperate criminal. Although he was armed with a Winchester and was backed by the law, he could not help wondering if the criminal had a Winchester, too. When you point to a bad job of concrete work, take care that there is no concrete man pointing to a job of brick work which you would like to forget.

However, there are ways of advertising which are good—morally, and in a way to make the profits loom up. We are all familiar with the placards on cars, the ads. in papers, the slips in letters and letters carefully written to prospective customers. These are all good ways to advertise, and it is safe to say that they are not over done by brickmakers. There are, beside these ways, other ways which are, perhaps, quite as potent but not as common.

For instance: How many makers of vitrified brick regard the technical or engineering school as a place in which to spread the knowledge of their wares? In these schools are being trained not only the men who are to be the brickmakers of the future, but also the men who are to be the brick users. Here are young men learning to be chemists, mechanical and civil engineers, architects, sanitary and municipal engineers. They are the men who will, in a few years, organize companies, build factories, open mines, pave streets, construct sewers and build office buildings. What material will they use? They are most likely to use the material they know most about. To-day they are testing cement and steel and stone; they are learning the value of these materials and how to use them. Is the brickmaker to sit by and let his ware be forgotten? But recently the contractor for a large brick sewer told us that the inspector, a college graduate, was up on cement and concrete "but don't know a brick from a block of wood painted red." When this inspector gets to have charge of work it will not be brick that have the best show to be used. This field for advertising is open and should be filled at once. Get hold of these embryo builders and so impress on their minds the beauty and value of brick that they never will forget them.

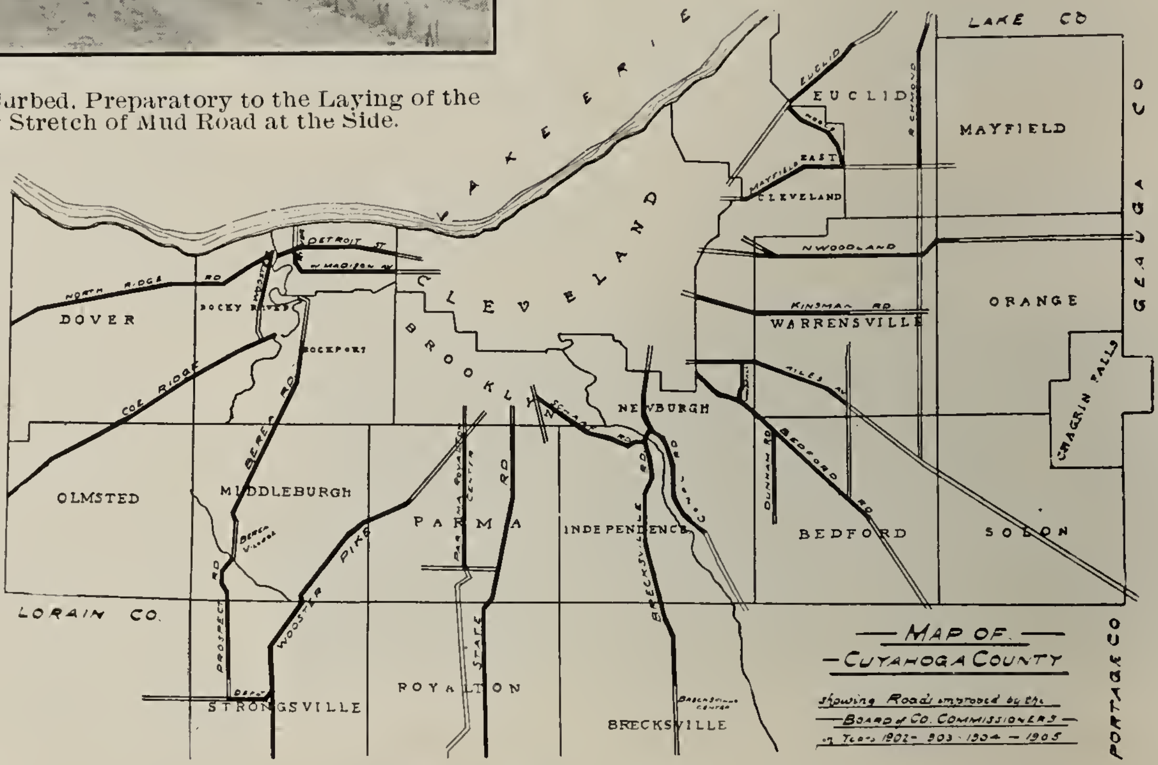
Another advertising medium which is available is the camera. None of us ever get too old to enjoy looking at pictures. We will look for the cartoon before we read the head lines. Pictures of the plant and of the different stages of manufacture will be found to interest nearly all builders. Pictures of the buildings and works into which the brick go show their adaptability and usage, common and uncommon. This method has been used by many manufacturers, even the boiler maker who furnishes the boiler hid away in the basement is proud to publish pictures of the buildings he is heating. If this is a good method for the maker of the invisible part of a structure, it certainly would be far better for the one who furnishes the material for the structure itself.

There is a demand for a small reference book presenting the uses and merits of brick in concise and accurate form. Such books have been gotten out by steel and iron makers, and probably there is no reader of this article who cannot reach out and lay his hand on one of them. A similar book showing the strength and shapes of brick, explaining their especial uses, the measurements of brick work, specifications for pavements, sewers, etc., would no doubt find a welcome place on the desk of the architect, builder and engineer.

Showing How the Ordinary Mud Road is Graded and Curbed, Preparatory to the Laying of the Stone Base and Pavement. Notice the Pleasing Stretch of Mud Road at the Side.

Without going into further detail as to the system to be used in advertising brick, let the general rule be to stick to honest methods and advance brick by constantly keeping their merits prominent rather than by running down the materials with which they come into competition.

"What shall be the method of carrying forward advertising by this system" is our last question. There are two general ways in which to carry out this system. The first is for every manufacturer to do what he can as an individual. The second is for an association of manufacturers to take hold of the matter and carry forward a system of general advertising. To us, the latter seems to be the better way.



Cuyahoga County and Cleveland, Indicating the Brick Pavements Already Laid Throughout the Rural Farming Community. These Roads Are the Delight of the Fast Driver, the Autoist and the Bicyclist.

At Work Laying the Stone Base and Rolling it in A Rather Strange Operation to be Seen Five or Ten Miles from a Town.

One advantage of the association method is that the work can be pushed much more thoroughly and cheaply (a good but unusual combination—thoroughness and cheapness.) Competent help can be secured to collect, record and publish data, new ideas would be quickly spread throughout the manufacturers and users of brick, and a good fellowship would be established between the members of the association. The work could be prosecuted with greater fairness and less friction than if every plant starts on an individual campaign—the small manufacturer will not think that the large manufacturer is trying to draw all the attention to himself, and on the other hand, the large manufacturer will not think that the small manufacturer is profiting unjustly by his efforts.

The advantages of such an association would be many, and though at present there is, perhaps, no sign of immediate action in that direction, the question is a pertinent one and should receive the thought of every brickmaker whether his sales be great or small.

In this article the object has been rather to call attention to the need of advertising and the benefits that may be derived thereby than to give any definite outline or to go into detail regarding the subject. The time is not far away, we venture to predict, when advertising will receive more thought and attention than it does now. When that time does come, let the brickmaker be prepared for it and be ready to advertise,—honestly, judiciously and extensively.

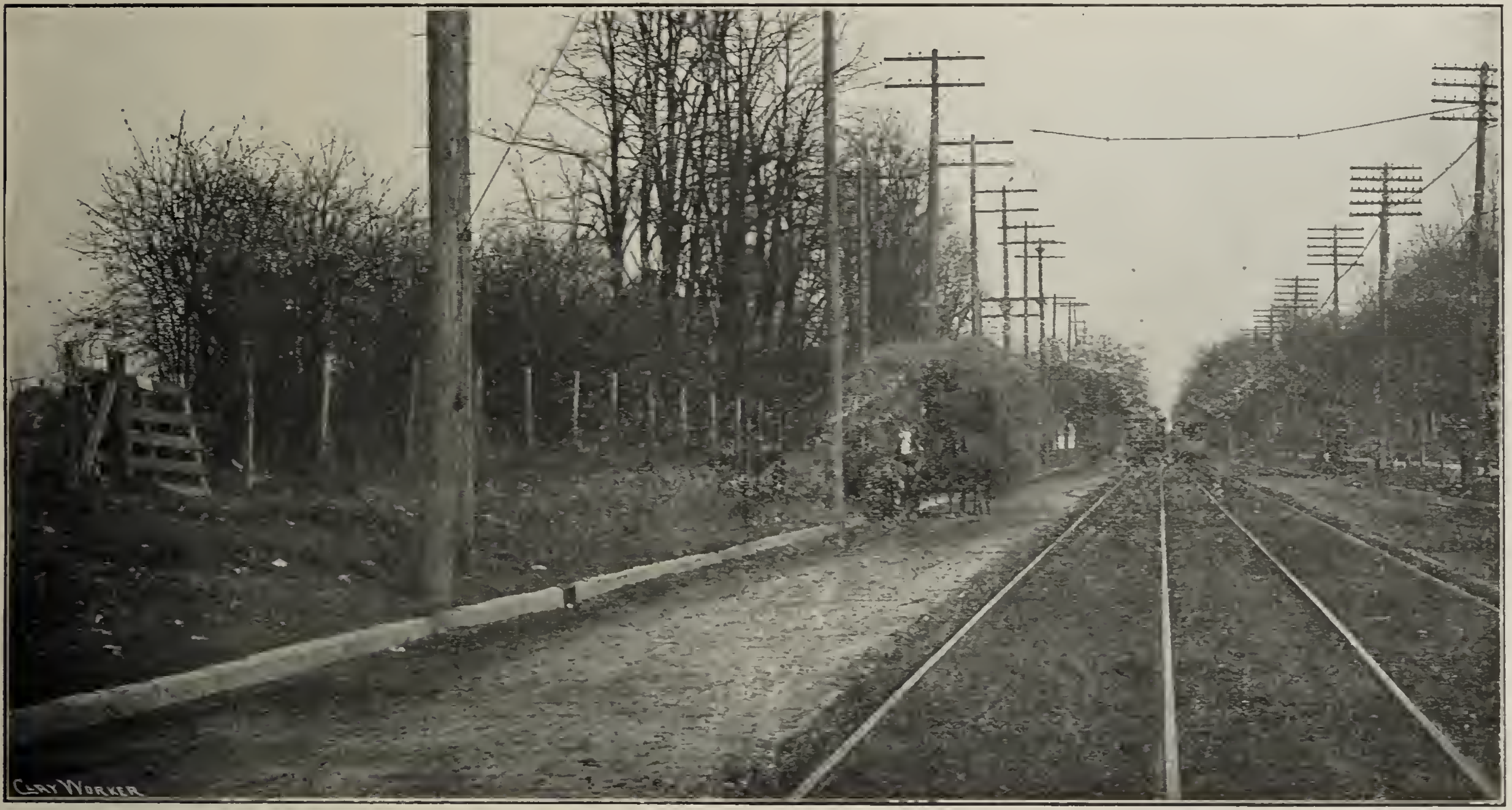
Y. E. O

Written for THE CLAY-WORKER.

BRICK PAVED COUNTRY ROADS.

Splendid Highways Leading into Cleveland—One of the Causes for the Rapid Growth of that City—How They are Constructed—Benefits That Accrue to City and Country Folk.

WITH the city of Cleveland as a center, and spreading out fan-like in all directions, is to be seen perhaps the most wonderful system of country roads in the world. Think of driving for miles and miles through the open country on hard, dry, clean brick pavements which are laid and kept in repair quite as well as the pavements of the best avenues of the big cities. Cuyahoga county, of which Cleveland is the county town, has set the pace and in the last three or four years has been doing pioneer work in the construction of roads which give satisfaction, particularly to the farmer with his heavy wagon, who ordinarily has to plow through several feet of mud to reach the Christmas markets.



One of the Main Approaches to the City. A Twenty-Foot Brick Pavement, Laid on Each Side of Trolley Line, Affords the Farmers Easy Hauling for the Heaviest Loads at All Seasons of the Year.

The same ideas used in the laying of brick pavements in the city are applied to this county project. Mud in the city is just as dirty, sticky and undesirable as the mud found on the country road. It is made the same and is being expelled in the same manner. The main objection made by the rural settlers has been the item of expense. The farmers always objected to standing their part. At the same time the representatives of those same farmers usually voted for the spending of millions on the constructions of fancy county buildings and other elaborate projects.

Miles and miles of brick pavements center in Cleveland, the "city of brick streets." All the main arteries into the city are paved. These pavements are 14 feet wide, enough for two ordinary teams to pass. At each side are six or eight foot strips of the ordinary mud road type which may be used in cases of emergency.

The roads are made much after the ordinary style. The earth is removed in the usual grading process, curbing is set level with the road, large stone is placed as the first base, grading down to finer stone and sand for the bed on

Name of Road.	Length in Miles.	Kind of Improvement.	Engineers Estimate.	Taxable to Property	Payable by County	Year.
Bedford	5.75	Bitulithic or Brick				1905
Berea	1.50	Brick	$28,000	$3,184	$24,815	1904
Brecksville	6.50	Brick	112,500	29,571	82,929	1904
Brecksville	2.50	Brick				1905
Canal	2.00	Brick				1905
Coe Ridge	7.50	Brick				1905
Depot	1.25	Mcdm.	8,300	1,314	6,985	1904
Detroit	3.00	Asp'lt	116,600	69,071	47,528	1903
Dunham	3.00	Grad'g				1905
Euclid	2.25	Brick	88,668	65,515	23,152	1903-4
Euclid	2.25	Grad'g	77,500	65,507	11,992	1903-4
Kinsman	4.50	Bituli-c	95,000	37,742	57,257	1904
Kraft's Hill	.25	Grad'g	1,510	380	1,130	1902
Miles Ave. No. 2.	3.00	Brick				1905
Noble	2.50	Brick	48,643	30,943	17,699	1902-4
North Ridge....	2.25	Brick	66,500	24,189	42,311	1904
N. Ridge No. 2..	6.00	Brick				1905
N. Woodland...	7.25	Mcdm.	61,000	22,802	38,197	1903-4-5
Parma-R-Center.	3.50	Mcdm.	79,000	24,121	54,878	1904-5
Pettibone	3.00	Grad'g				1905
Prospect	1.50	Brick	42,000	3,290	38,710	1904
Richmond No. 1.	3.75	Mcdm.	16,000	1,816	14,184	1904
Richmond No. 2.		Mcdm.	8,700	2,187	6,512	1905
River	.50	Brick	12,000	4,803	7,197	1904
Schaaf	3.00	Brick				1905
State No. 1....	3.00	Bituli-c	70,520	34,535	35,984	1903
State No. 2.....	.50	Brick	23,400	16,367	7,033	1905
State No. 3.....	8.00	Brick				1905
W. Madison	2.50	Brick	65,000	26,822	38,177	1904
Windfall	1.25	Grad'g				1905
Wooster	1.25	Brick	34,000	12,895	21,105	1904
Wooster Pike...	8.00	Brick				1905

which the brick are laid. In one picture may be seen the road graded and the curb in position. In another may be seen the road makers at work laying the stone base and rolling it into position. The work is let out on contract under inspection.

The cost of maintenance is not as large as would be expected. Last year the sum of $120,000 was allowed, but of this, only $10,000 has been spent. The rest will go to the improvement fund.

The cost of brick roads, compared to asphalt, is seen in a table compiled by County Surveyor W. H. Evers, who has general supervision of the county road making. The table gives the entire list of roads, the estimated cost, the amount paid by the property owner and the amount paid by the county. Asphalt for county roads has not been the success that brick has. It costs twice as much to lay and more to maintain. The cost of the roads under construction this season is not given. The schedule as complied by the surveyc is as follows:

It has taken Cuyahoga county but ten years to pave the roads shown in the list. In five years more it is figured that every road leading into Cleveland will be paved, in addition to many of the cross roads.

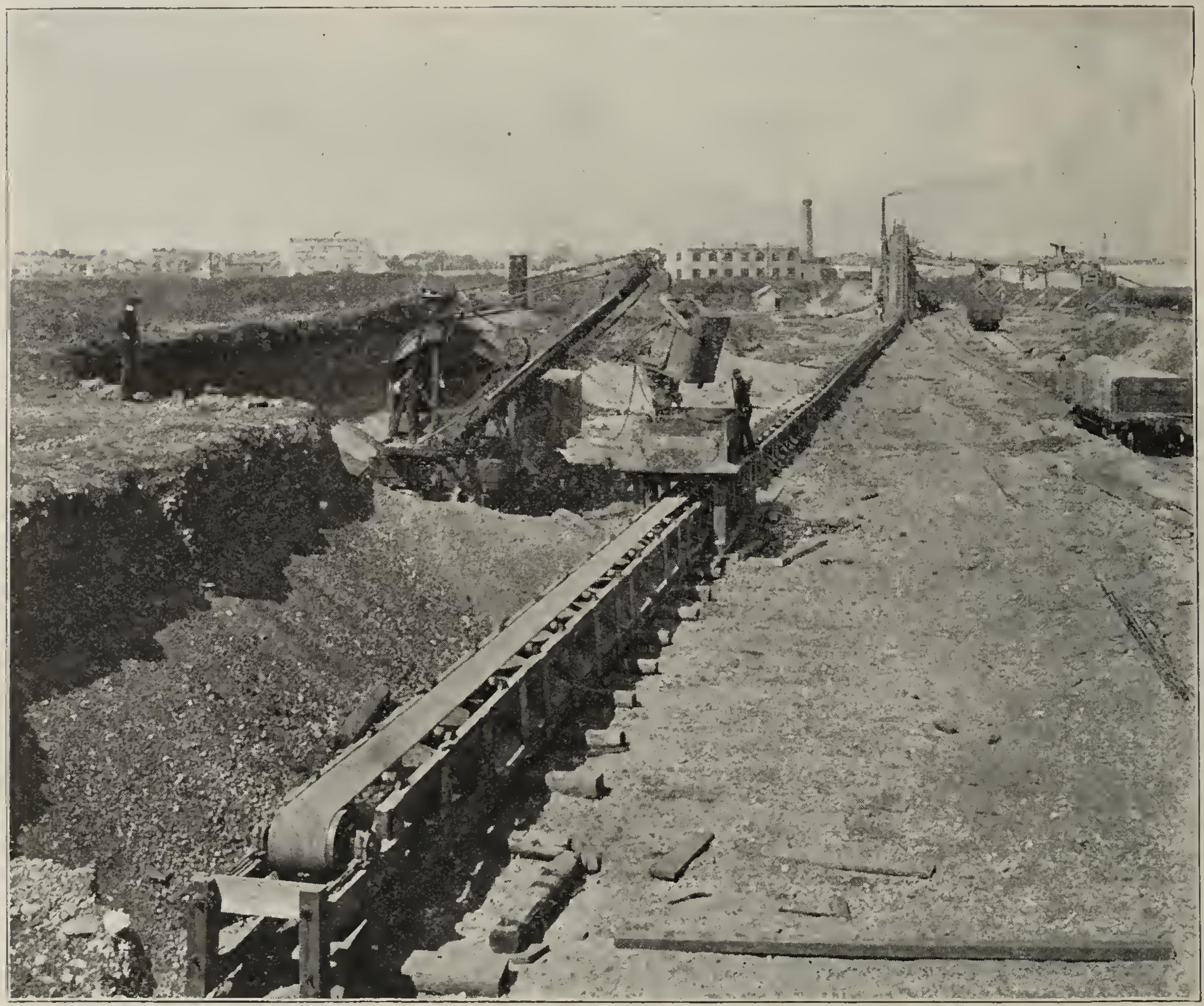
The farmers can now own automobiles, for they have the roads on which to use them. It is no uncommon sight outside of Cleveland to see young men with their best girls, speeding their horses into town on these brick pikes. The time gained by the farmer in his trips to town and back more than makes up the cost of the pavement in a few years.

More brick roads will be laid this year. Buckeye.

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

BELT CONVEYORS.

THE MODERN PLANT, to be fully equipped, must contain all the labor and time-saving appliances possible, and of these, the conveyor is of great import. Ever since the advent of the conveyor upon the market, the demand has steadily increased, and to-day there are many firms devoted to the one specialty of conveyor systems.



Plant of the Lake County Gravel Company, Libertyville, Ill., Equipped With 1,458 Feet "Leviathan" Flat Type Conveyor and Elevator Belting.

The demand seems to be greater for the belt conveyor systems than for any other, and this is considered due to the economy both in installation and operation; and to the few repairs and their moderate cost. The conveyor of this style is made up, aside from the frame, rolls, and idlers, of various kinds and classes of belt, it, of course, being necessary to have a heavy, strong and durable belt, and one to stand the excessive strain with which it has to contend.

In many, or in fact, most of the positions which require a conveyor, a belt to withstand atmospheric conditions is required, as in the cut which accompanies this article. Such being the case, a belt is needed which will successfully operate and be so constructed as to be practically water-proof.

It is well known that dampness is destructive to leather, so it must be disqualified as a belt material where dampness is concerned. Rubber, also is known to fail in water. For, take a rubber band (this is as near pure rubber as can be obtained,) and after it has been in water twenty-four hours, upon its removal it will be found to be brittle and will break or crack. Action of the sun on rubber will further hasten this damage after it has been dampened, and from this we see that the coating of rubber, which can only penetrate betwen the plies and weave, will soon give way to the action of the weather, and leave only the presensation of a surface of untreated cotton duck which soon surrenders to hard usage.

This leaves us only, of the standard makes, the canvas stitched belt, which, when rightly made of strong, heavy material and treated with a good composition of oils in such a manner that every fibre is saturated, is as near waterproof as possible, for the oils, being of a heavier gravity than water, will not give place to water, and, consequently, cannot be destroyed by it.

As a whole, the canvas belt is best for the conveyor purpose, for it only contains all the good qualities of rubber and leather belting, but the ofttimes necessary quality of being water-proof.

The belt used on the conveyor system of the Lake County Gravel Company (picture of which, loaned through courtesy of the Main Belting Company of Chicago, appears above), is the "Leviathan."

Written for The Clay-Worker.

A Successful Sand=Lime Brick Plant.

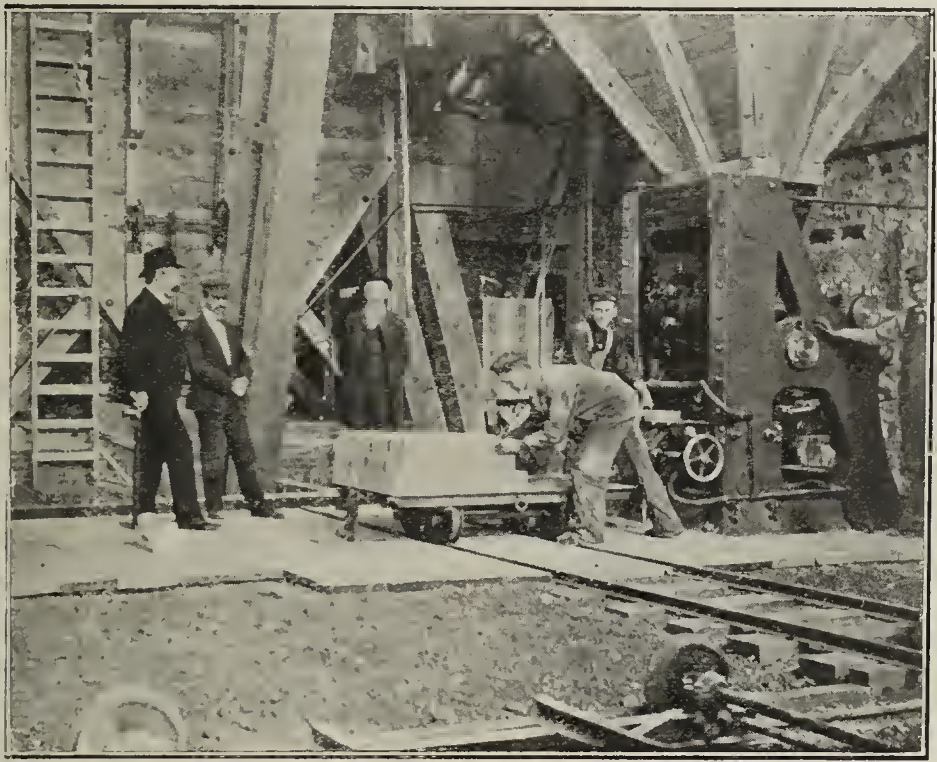
How the New Building Brick are Made on the Shore of the Mississippi, and Some of the Buildings in Which They Are Used.

WHAT OF ALL the builder's material seems so insignificant as the little bricks that are piled one upon another until they form the walls of great buildings? They are not given as much attention by the casual observer as the mortar which he sees prepared on the site of the building.

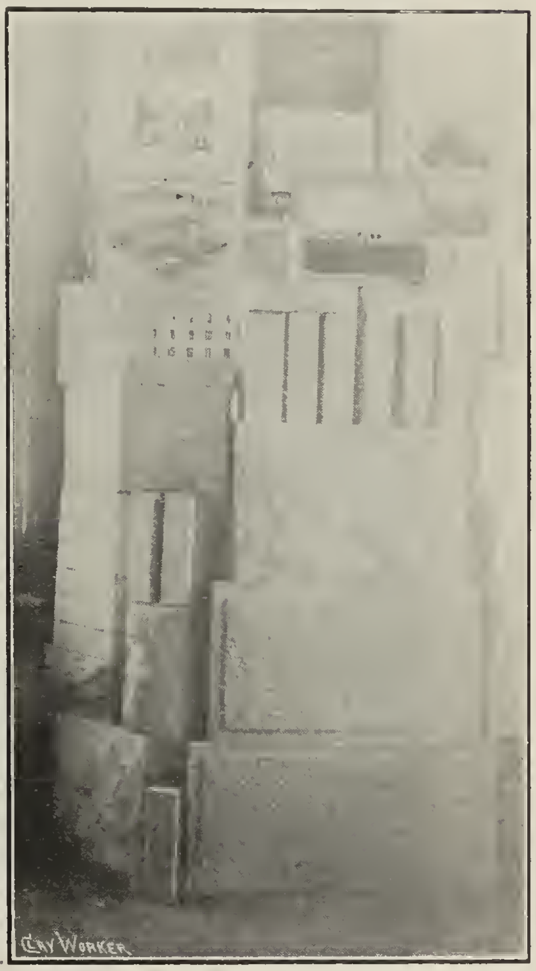
The writer must admit that he was no more enlightened on this subject than any one of the millions of other people until the other day when he made a trip through the plant of the Iowa Granite Brick Co. in Clinton, Iowa. Then his eyes were opened to the real importance of the brick, and especially the sand-lime brick. He saw how much work, how much care and—last but not least—how much machinery is necessary for the manufacture of that one little grey colored atom that helps to make the giant sky-scrapers of the large cities.

Stack Lined with Sand-Lime Brick.

Interior View of the Factory of the Iowa Granite Brick Company.



First Car of Brick Made. Subsequently, an Additional Boyd Press was Installed.



Some of the Different Blocks Made.

The Iowa Granite Brick Co. is admirably situated on the bank of the great Mississippi river, from which much of the sand for the manufacture of the brick and ashlar blocks is obtained. The finer sand which is mixed with the river sand and used as a filler, making the bricks perfectly solid, is taken from the hills on which the city is built. In speaking of the sand obtained so near at hand, one of the officers of the company said that he considered it remarkably adapted for the very best sand-lime brick on account of it containing a great amount of silica.

A giant suction pump, mounted on a barge, pumps the river sand, which is coarse, from the bed of the river and deposits it on barges. These are then hauled by tugs to a point opposite the plant and the sand is loaded on cars which are propelled by steam to the plant. There it is mixed with the hill sand.

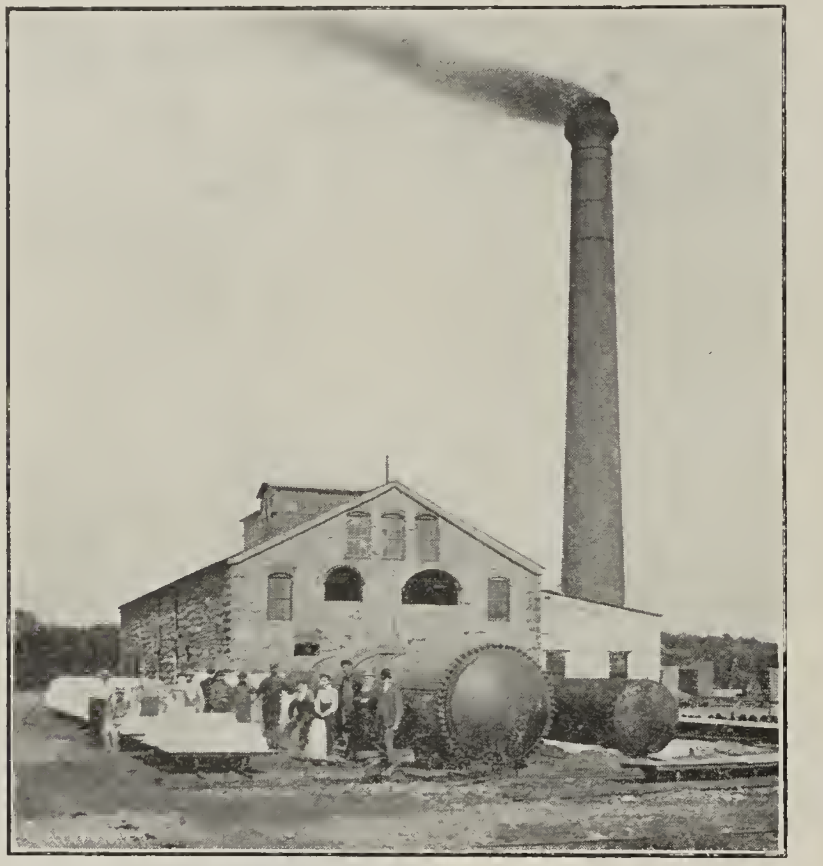
This composite is carried by a chain elevator to the top story and dumped into the steam dryer. As the sand drops to the steam pipes on the bottom of the dryer it becomes even more thoroughly mixed. Finally it sifts through the net work of steam pipes and drops into a bin, directly beneath the dryer. An immense blow pipe carries away all the moisture from the dryer and the bin beneath it. From the bin the sand is let into a trough from which a chain elevator carries it to the top and deposits it in a hopper in which the lime is also deposited. The lime used by this company is an absolutely pure calcium carbonate.

From the hopper, the lime and sand goes into the measuring machine, one compartment of which receives the sand and the other the lime, in the necessary proportions. The lime and sand are then fed into a tube mill, five feet in diameter and twenty feet long, making 23 revolutions a minute. This tube mill contains 10,000 pounds of Iceland black flint pebbles which grind the lime and sand together. The pebbles are obtained in carload lots from New York, to which port they are brought as ballast in vessels. Out of the tube mill the mixture of sand and lime is discharged through a spiral discharge, passing through a screen and dropping into a pit.

Again a bucket elevator picks it up and carries it to the third story, where a regular mixing machine is located. This machine is divided in two parts, the mixture first passing through a compartment where it is dry-mixed and then through a second compartment where it is moistened with steam. Thence it drops to the first floor into a bin with two parts, each capable of holding 120,000 pounds, or sufficient material for 20,000 bricks. The mixture must cure for 24 hours, hence the two compartments. While the composition in one is curing, that in the other is being used. During the curing process the heat of the lime practically takes all the moisture from the composition.

After the twenty-four hours of curing the mixture is discharged, by opening slides in the bottom of the compartment, and drops into a trough from which it is conveyed by a chain conveyor to an elevator which carries it to the top again and deposits it in the two hoppers over the two presses. Each hopper holds 35,000 pounds of material—enough for six carloads of brick.

But it was the presses that most aroused the interest of the writer. They are Boyd machines, made by Chisholm, Boyd & Co., of Chicago, of which firm Mr. Harry J. Flood is president and general manager. One is a standard size, four-mold brick press and the other is a combination press. The latter is a wonderful piece of machinery. It is capable of making, at one stroke, four standard sized bricks, or three ashlar blocks 4 x 5 x 10, or two ashlar blocks 4 x12 x 12, or one ashlar block 4 x 12 x 18, or one ashlar block 4 x 12 x 24. The pressure exerted by either of these presses on the material is 100 tons per brick, and each press is capable of making from 18,000 to 20,000 bricks every ten hours. The Iowa Granite Brick Company thinks there is no press in the country equal to the Boyd press. The members of the company say they would not want to operate a sand-lime brick factory without it.



Taking out the First Brick Made by the Iowa Granite Brick Company.

Even after the brick have come from the gigantic pressure of the presses they are not ready to be used in building. To be sure they are so solid that the writer was able to stand on one without hurting the brick in the least. Two men take the brick from the presses—being careful not to in any way spoil the sharp edges and corners—and deposit them on steel cars. These cars are capable of holding about 900 bricks. When the car is loaded it is run into a big hardening cylinder.

The Iowa Granite Brick Co. has two of these cylinders, one 6 feet in diameter and 76 feet long, capable of holding 23 of the car loads; the other, 6 feet in diameter and 69 feet long, capable of containing 21 cars. The largest of the two is a double header cylinder—that is the cars can be run in one end and out of the other.

When the cylinder has been filled with the cars of brick, the heavy steel head is bolted on and the bricks exposed to a live steam pressure of 120 pounds to the square inch. During this process the raw material undergoes a chemical action, due to the lime and heat, which converts it into a piece of artificial stone. When taken out, the bricks are as hard as granite and are ready to be put in the walls or loaded on cars for shipment. A 125 H. P. Hamilton Corliss engine and a 200 H. P. horizontal boiler furnish the motive power for the factory.

The facilities for shipping could not be better. On the north and west sides of the factory are sidetracks from the Chicago & Northwestern Railway, the Chicago, Burlington & Quincy Railway, the Chicago, Rock Island & Pacific Railroad, and the Chicago, Milwaukee & St. Paul Railroad. And besides these four great railroad systems, there is the Mississippi river. The sidetracks also make it possible to unload the coal and lime direct from the cars into the factory.

The Plant as it now Appears.

The market for the product of the factory is a good one. Not only does the call for this kind of brick come from Clinton and the surrounding cities and towns, but the company has shipped its product for a distance of 250 miles in all directions. In Clinton, the new brick is "all the rage," many of the finest buildings having been constructed with it.

Most prominent of these buildings, probably, is the residence of Lafayette Lamb. This is doubtless the finest residence in the State. Mr. Lamb has also had a barn, costing $35,000, built with this brick. Other buildings in which the Iowa Granite Brick Company brick is used are the new Hotel Cromwell, in which practically 1,000,000 brick were used; the car barns of the State Electric Co.; the wire screen factory 154x227 feet with a tower 80 feet high

Thirteen Cars of Brick Fresh from the Cylinder.

and 20 x 24 feet, and an outside power plant, 40 x 60 feet; the Y. M. C. A. building; Champlin's horse barn for imported stallions, 40 x 180 feet; the Anderson & Winter furniture factory; the Lamb garage; Iowa & Illinois interurban car barns and a sub-station and depot at Princeton, Iowa, and numerous other buildings. The interurban company used the brick for lining a 145-foot steel smoke stack in preference to the fire-clay brick.

Hotel Cromwell, Clinton, Iowa, in Which Nearly 1,000,000 Sand-Lime Brick Were Used.

From the above it will be seen that the factory has a capacity for turning out from thirty-six to forty thousand bricks a day. The main building was formerly part of a sawmill—the one time great industry of Clinton. This building is 60x110 feet in size. The walls, which are two feet thick and 35 feet high, are entirely of rock, and built on rock bottom. An addition to the main building is a substantial shed, 40x100 feet, covering the hardening cylinders and also giving room for the storage of about a half million brick. Another brick shed, 20 x 100 feet, has a capacity for the storage of about 500,000 more brick, and still another shed, 15 x 95 feet, has a capacity for the storage of about 75,000 Ashlar building blocks.

Residence of Mr. L. Lamb at Clinton, Iowa, Built of Sand-Lime Brick.

Though this factory—probably one of the largest of its kind—has only been in operation about eighteen months, it is well supplied with business. There are good prospects for a prosperous year in 1906, and the company is prepared to take care of the business. All of the storage sheds are filled with brick and ashler blocks and with its capacity of 40,000 bricks per day, the factory should have no difficulty in keeping up with the demand.

ECONOMIC GEOLOGY OF THE UNITED STATES.

Under this title Dr. Heinrich Ries, of Cornell University, has written a text book designed for elementary college classes in economic geology. The subject is perhaps one of the most difficult to handle since the amount of matter to be discussed is enormous and it is a delicate task to exercise proper discrimination in the selection of material so as to maintain a proper balance between pure geology, technology and statistics.

The great divisions of this volume are, of course, the nonmetallic and metallic minerals. The former includes coal, petroleum and natural gas, building stones, clay, lime and cement materials, salines, gypsum, fertilizers, abrasives and minor minerals, closing with water, soils and road materials.

In the division of metallic ores we find first the geology of ore deposits, iron, copper, lead and zinc, gold and silver, silver-lead, aluminum, manganese and mercury. The book closes with the minor metals, like chromium, nickel and cobalt, platinum, uranium, etc.

The subject of clays is treated in a short chapter of sixteen pages, which, of course, is as much space as can be devoted to it in a work of this character. As far as it goes it is most excellent and Dr. Ries certainly is well qualified to prepare such a statement.

Walk of Sand-Lime Brick 8 Feet Wide and 700 Feet Long in Clinton Park.

A book of this character is bound to contain errors and a few were noted by the reviewer. Thus the location of the Ohio salt district is erroneous. Three of the five localities shown in Ohio have been abandoned for fifteen years. The brine in the southeastern part of the state is not obtained from the Berea as stated, but from a higher formation known as the salt sand.

In speaking of natural gas in Ohio the author states that, "some gas is obtained from the Clinton limestone." This is misleading. The gas rock is a sandstone and not a limestone. Further, the field is not a small producer but one of the largest in the United States.

The book is well illustrated and the illustrations are most excellent as well as the typographical execution as a whole. It contains 435 pages and 97 illustrations. The publisher is the MacMillan Co., New York. It will pay anyone interested in the mineral industries to have a copy of this excellent treatise.

A. V. B.

Written for The Clay-Worker.

POTTERY NEWS.

OUTSIDE OF the price proposition, the pottery business has been very satisfactory within the past year. Labor troubles have not disturbed the potters to any great extent and they all have had plenty of business to keep their plants running full handed, so that the only cause for real worry has been the price proposition, which has really been demoralizing. The prices that the potteries in the table and toilet ware business have got have not been as good as they should have been for three or four years, but when the Association gave way early this year it looked very much as if it would be a case of "the survival of the fittest," as all the plants seemed bound and determined to cut each other's throat as far as price was concerned. At an extremely low price the larger plants are, as a general rule, in better shape to compete, as they can produce ware at a somewhat lower price, and for a time it looked as though a good many of the smaller organizations would be pushed to the wall. Gradually, however, the larger plants got back into line for a better price until the other potteries were in line for the same thing, and while the prices are not, to-day, what they should be at all, or in fact, any thing like it, yet the prices are better than they were the first of the year, and the prospects for a better price during 1906 are exceptionally good. The prospects for a good year's business for the coming year is also good, so that taking everything into consideration for the past twelve months, things are not so bad but that they might have been worse.

If the white ware potteries get into line for a better price next year and will stick together, which it is hardly likely that they will, they will have a good year's business, but if they do not stick together they will experience the same trouble next year that they have gone through with during the past year. A trust has also been talked of to a great extent, and even at the present time a capitalist and promoter are at work upon books of the different potteries throughout the middle West trying to get them to enter into a combination and offering a part in cash and a part in bonds and a part in the stocks of the new corporation, but this matter is not taken very seriously and it is thought that the combination will not go through now, although this scheme has been tried something like a half-dozen times, and this one seems nearer success, than any other has been before, and although it is very near success, yet there are some points that I do not think will be overcome, at least at present, and for this reason do not think that the merger will go through.

The stoneware business has been different, for good prices have prevailed all this year until about two months ago, when the stoneware market broke, and while stoneware prices are low to-day they will likely be good again sometime in either April or March, and will in all probability remain good for the balance of next year. The art pottery business has been good all of the past year, and the prices that have prevailed have been good during the entire year, and the business as a whole has been very satisfactory.

The J. B. Owens Pottery Company, of Zanesville, Ohio, has installed some additional machinery in their plant for the manufacture of floor tile which they intend to make right along with their regular line of art pottery.

The George C. Murphy Pottery Co., of this city, whose plant was destroyed by fire some two or three years ago and who claimed that the destruction of the plant by fire was in part due to the fact that the Penn Co. left a train stand in front of the pottery for twenty minutes during the fire, thereby interfering with the work of the fire department, were awarded $25,000 by the courts and which the railroad company have now paid. The proceeds will be equally divided between the pottery company and the insurance company, owing to the fact that it was a joint suit for damages against the Pennsylvania Company.

The Mosaic Tile Company, of Zanesville, Ohio, has just completed another addition, which, while not as large as the other additions recently made to the above plant, will count probably far more to them, as they expect to make their new line of glazed and enameled tile in this new building.

The New Lexington Porcelain Company, of New Lexington, Ohio, is erecting two large additions to their porcelain pottery at New Lexington, Ohio. One of which will be used as a kiln room to contain three new kilns that they are at present erecting, and the other to contain additional equipment for the manufacture of high potential insulators, on which the plant is operated exclusively.

The North American Mfg. Co., of Newell, W. Va., is progressing very favorably with its new pottery plant at Newell, W. Va., which will, when completed, be by far the largest pottery in the world, having a capacity of thirty kilns, which are so large in size as to exceed the capacity of the largest plant to-day, which is thirty-two kilns. These people are building a town at Newell, having all of the streets paved and sewered, and having nearly completed their own water works, and owning several other industries located at Newell as well as the pottery, although this is by far the largest issue. They have also erected a bridge connecting the city with East Liverpool, and are building a street car line connecting the new town with the old one. The main stockholders are largely interested in the Homer Laughlin China Co., the largest pottery in this country to-day, and perhaps in the world, having a capacity of thirty-two kilns, although this is not equal to the thirty-kiln plant being erected, the difference being in the size of the kilns, the equipment and the size of the warehouses and other buildings.

The new plant of the U. S. Porcelain Co., of Findlay, Ohio, is about ready to start up, and the management expect to have the plant in complete operation by the first of the year. TOM POTTER.

East Liverpool, Ohio.

A "BUNCH" OF "AMERICAN BEAUTIES."

PROBABLY ALL OF the readers of The Clay-Worker know of The American Clay Machinery Company, of Bucyrus, Ohio, and the majority of them have no doubt had business dealings with the company. All who have received letters from the American Company know of the neat appearance of the stationary and the care of the stenographers, as shown by the faultless appearance of the letters. This neatness is largely due to the ability and care of the young ladies who manipulate the typewriters in the American offices. While The Clay-Worker and other clay trade papers have had much to say of the American Company, it has been left for The Clay-Worker to pay tribute to the tireless stenographers whose work is exacting and yet an unseen and often unappreciated part of the busy business life. We publish in this issue an excellent group picture of the stenographers at the main offices of the American Company, at Bucyrus, Ohio. In addition to this force at the Bucyrus offices of the company, there are others employed at the Willoughby office. When it is considered that a stenographer will easily write a hundred or more letters a day, it will at once be seen that the volume of mail issuing from the offices of the American Company must be something enormous. It will also indicate to what extent the clay trade has grown and the important place it occupies in the industries of the world.

Smith Premier No 2
Stenographers at the Bucyrus Office of the American Clay Mchy. Co. Bucyrus Ohio
MN12 Chi

A "BUNCH" OF "AMERICAN BEAUTIES."

Written for The Clay-Worker.

KANSAS CITY BRICK AND BUILDING NEWS.

THE PAST YEAR has been one of great improvement in Kansas City, both in the business section and the residence part. Really the only feature of the annual reports which is unsatisfactory is in the matter of brick pavement. There was practically no brick pavement laid in the year. This is not surprising, considering the kind of brick that has already been laid in the streets here, as it has been of so poor a grade that it will handicap the brick men for years. It has not worn well; was mostly laid without a guarantee of wearing quality, and of course that made the contractors choose the cheapest brick they could find.

Cities all around Kansas City are laying good brick streets, under a guarantee clause for lasting quality, and they have some beautiful streets to show for it, and some of them are old enough to show wearing quality. Kansas City is still letting its contracts to the asphalt companies, largely, and is flirting with various other kinds of pavement, but brick seems to be tabooed.

Kansas City has 463 miles of streets, of which 220.92 miles are now paved.

Permits were issued for more than fifteen miles of new buildings in Kansas City during 1905. The number was 4,413, and the value $10,917,024, compared with $8,816,575 in 1904. The aggregate front feet of new buildings is over 80,000, and making allowance for spaces between the new residences for which permits were issued, the total new buildings, if they had been concentrated in one area, was enough to add not less than 200 new blocks to the city's built-up area.

The new buildings would make seven streets of solid buildings, each street more than a mile long.

The value of permits issued each month for the past two years is here shown:

	1905.	1904.
January	$ 320,250	$ 264,000
February	390,155	423,890
March	1,528,165	1,033,580
April	992,865	814,150
May	1,108,417	702,601
June	1,021,940	968,476
July	874,570	867,565
August	1,025,015	810,270
September	1,399,645	859,045
October	720,160	1,036,430
November	773,990	685,825
December	716,852	350,725
Totals	$10,917,024	$8,816,577

The building record of Kansas City, Kansas, beat all previous years. There was 643 permits issued in 1904 and 818 in 1905. The amount of money represented in the buildings of 1904 was $1,022,891, while in 1905 it amounted to $1,172,093. In 1904, one permit was issued to the Nelson-Morris Packing Co. for $300,000, and last year there was no single permit that represented half that investment, so the investment for last year represents a larger number of houses, especially in homes.

A test case has been brought against Kansas City, Kas., by one of the paving companies, to test the law passed by the last legislature of that State, which compels paving companies and sidewalk contractors to accept liens against the abutting property in payment for the work. The banks will not accept these tax bills, or loan money on contracts under this new law. Before this law was enacted, internal improvement bonds were issued and guaranteed by the city for all street improvements.

In this city the bitulithic people are trying to get some business, and they are starting to work with the understanding with the Board of Public Works that they are to overcome any remonstrances.

The local contractors are agitating the matter, and it is more than likely that the Federal grand jury will before long have an opportunity to investigate the persistent rumors of a sewer trust in the territory west of the Mississippi river. Sewer pipe manufacturers out this way stand pretty high in politics, and they will probably make a considerable effort to keep an investigation out of the hands of the jury, but on the other hand there has been a great deal of complaint about the advance in the price of sewer pipe.

The brick trust plans are still in abeyance. They have asked the plants for an extension of the option to April 1, as they were unable to carry their plans through to maturity by the first of the year. Some of the plants have refused to extend the option, while others are known to have made the extension, with the understanding that they could make improvements they thought necessary, and same would be taken up at face value by the purchaser, in case the deal was closed. It is hardly thought possible out here that the deal will now be finally closed.

Beach Scenes, Atlantic City.

A new brick plant will soon be put in at Waverly, Mo., where they have both shale and coal on their land, and should be able to turn out some good brick. Mr. Monahan, in the Junction Building, this city, is interested.

The Pittsburg Brick Co. is going to improve and enlarge the Pittsburg plant, which is now running night and day, turning out paving blocks. They will also put in a steam shovel in their plant in Sycamore, Kas. They report having just landed the contract for 35,000 yards of paving brick for Little Rock, Ark., and about 25,000 yards in Wichita, Kas., where the Kansas gas-burned brick had the advantage, on account of proximity. They are also furnishing a million and a half of paving brick for Shawnee, Okla.

The Paragon Concrete Fence Post Co. has been incorporated in this city, with a capital stock of $20,000, by John T. Wilson and others.

Walter S. Dickey, of the W. S. Dickey Clay Mfg. Co., has just returned home from a trip to New York, Washington and other points.

The Diamond Brick & Tile Co. is the name adopted by a new brick company which has been but recently incorporated in Arcadia, Kas., with a capital stock of $120,000. They have a large tract of land and it not only includes a good quality of shale, but fire clay, and is underlaid with good coal. They will put in a plant with a capacity of 50,000 per day. Wm. R. Sanborn, of Kansas City, is interested.

Board Walk Scenes, Atlantic City.

F. A. White, superintendent of the Versailles, Mo., brick plant, reports shipments of both fire clay and brick to St. Paul, Minn., and intermediate points in Iowa. He is now turning out an impervious dry press brick. K. A. W.

WHAT FOR, ON A FISHING TRIP?

Publishers Clay-Worker:

We beg to acknowledge receipt of your two combination knives ordered recently and wish to thank you for your prompt attention. We have referred to your ad. in The Clay-Worker, to see that we have not overlooked any of the combinations, and find that you have not gotten them all listed, for we have discovered that it can also be used as an egg beater and a tooth puller, which is very valuable around a brick plant during the busy season. It can also be used on a fishing trip to great advantage. With best wishes, we beg to remain,

Yours respectfully,
L. E. Rodgers Engineering Co.

Chicago, Jan. 2nd, 1906.

Written for The Clay-Worker.

ATLANTIC CITY BY THE SEA.

Where the N. B. M. A. Will Go for a Few Days of Recreation—Its Attractions, Brickyards and Features of Peculiar Interest to Clayworkers.

THOSE WHO ATTEND the coming National Convention at Philadelphia will be afforded an opportunity of visiting the most famous of America's seashore resorts. To those who feel that they can spare the time, a sojourn there of a few days or a few weeks, as occasion permits, may prove a great benefit, for no place on this continent has more ozone to the square inch than Atlantic City. The past season has been a strenuous one for brickmakers throughout tho country, and doubtless many of them feel the effects of the hard season's work, and more than they may be aware, need recreation. A change of scene and air will do them a powerful sight of good, mayhap lengthen their days of usefulness, so it is to be hoped that most of the members may arrange to spend a brief season at the seashore.

To those not familiar with the situation this may seem unseasonable, but of late years this resort has become famous as a winter resort. Attracted by the splendid hotels and the bracing atmosphere, thousands of well-to-do people spend the better part of the winter months there regularly, season after season. There is always something doing on the Board Walk. One source of Atlantic City's popularity is its get-at-able-ness. It is but an hour's ride from Philadelphia, and three hours from New York. For these and numerous reasons, Atlantic City has become one of the most popular places in America for conventions and meetings of all sorts, and it is more than likely that the taste which the visiting clayworkers will get of her attractions will lead to the selection of Atlantic City as a place of meeting a year or two hence.

As we have said, there is always something doing on the Board Walk, which is a promenade 40 feet in width and extends a distance of four and one-half miles along the ocean beach. This walk was constructed by the municipality at an expense of $250,000. It rests upon steel piling, elevated ten to fifteen feet above the strand, and from it, countless thousands view old ocean's varying moods in perfect safety. That Atlantic City is not a temporary resort may be judged by the fact that its realties are now taxed at over $100,000,000, and it has a permanent population of over 30,000 souls.

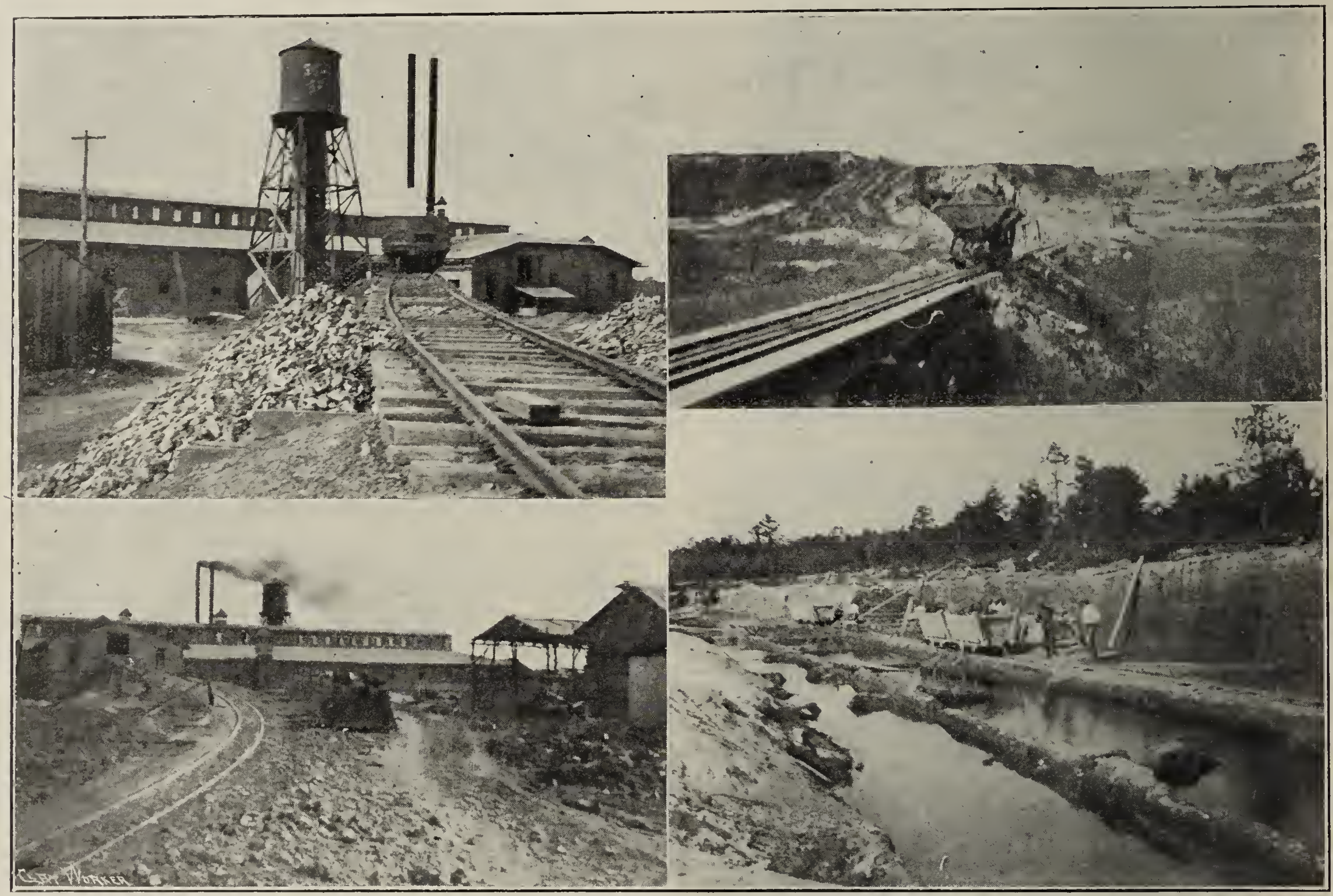
The city occupies a small island some ten miles in length, and less than a mile in width, extending nearly due east and west, and distant about seven miles from the main land, from which it is separated by large salt water bays and salt meadows, over which the splendidly equipped railroads being visitors at a mile-a-minute clip. It has many permanent hotels, great structures of brick and terra cotta, which rival in capacity of excellence and service the leading hotels of the metropolis. One of the most noted and capacious of these is the Rudolph, which will be headquarters, a special rate of $3.00 per day on the American plant having been agreed upon.

The Board Walk always presents more or less of a holiday aspect; all the principal places of amusement are located on this esplanade, and they embrace all manner of amusement, from theater to merry-go-round. There are a number of great steel piers reaching out into the briny nearly 3,000 feet, each one of which has its own amusement hall, sun parlors and cafes galore.

Atlantic City's Brick Plants.

To those who wish to mix a little business with pleasure, Atlantic City affords ample opportunities. The building brick plant of the Somers Brick Company will well repay a visit. It is located a few miles back on the main land, and is a well equipped two-machine, soft-mud yard, having a capacity of 40,000 to 80,000 brick per day. The company has two hundred acres of land on which there is about 12 feet of good plastic blue clay,—and plenty of water, as the reader may judge from the accompanying illustration of the clay pit. The clay is dug by hand and thrown into side dump cars holding 1¾ yards, which are hauled up the incline by cable and dumped on a platform, from which it is shoveled into roller crushers and thence into pug mill which feeds into an upright stock brick machine from the factory of the American Clay Machinery Company, Bucyrus, Ohio.

From the machines the brick are taken on rack and pallet cars holding 432 brick to a New York Blower Company dryer. The clay is tender, so the drying is done gradually, thirty-six hours being the alloted time for this process. The brick are burned in common up-draft kilns. Coal is used to water-smoke. This takes two or three days. The burning is then finished with soft coal in from four to five days more. The brick are marketed by rail, the price the past season averaging about $8.50 for common brick delivered at job. The annual output ranges anywhere from 12,000,000 to 25,000,000, depending on the market.



Snap Shots of the Brick Plant of the Somers Brothers' Company, Atlantic City, N. J.

The Atlantic City Country Club.

The plant looked good to us, but perhaps this was due in part to the fact that we made the trip in company with Hubert Somers and stopped on the way at the Country Club, where full justice was done a fine luncheon. The Country Club is certainly a beautiful place in the summer time. Just how it appears in mid-winter, we are unable to say, but we are perfectly willing to sample its hospitality at any old time under the guidance of Mr. Somers.

Another brick plant which may interest many of the members is that of the Ventnor Stone and Brick Co. It was not in operation at the time of our visit, but a glance through the plant showed that it was a well-equipped sand-lime brick factory. To those not familiar with this new process, it will afford an interesting study.

DO YOU WANT SOMETHING?

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

Written for The Clay-Worker.

THE BRICK AND BUILDING INTERESTS OF MILWAUKEE.

THE YEAR just closed was a very remarkable one for Milwaukee in the amount and value of building operations carried on in the city and suburbs. The report of the building inspector's office for the month of November showed a very material gain over the same month a year ago and it was also shown that the value of the building permits issued for the first eleven months of the year exceeded those for the entire year of 1904. There has been great activity in all lines. There is a constantly increasing number of apartment houses, mostly constructed of brick, and many extensive factory additions have been started and completed. The great work at the West Allis plant of the Allis-Chalmers Company is the largest piece of construction work now going on. When it is completed the plant will have been more than doubled in size and capacity. The buildings are all of brick and for them very large orders have been placed for common brick.

There is a strong probability that another railroad will enter Milwaukee in the near future, coming in from the west through the Menomonie valley. During the present month many large transfers of property have been recorded. At present it appears that two companies are trying to gain access to the city, although it may develop later that they are one and the same corporation. One is known as the Milwaukee-Southern Railroad which proposes to build a line southwest of the city to connect with many lines to the south and west. Another is the Terminal Company, which is said to be backed by the Wisconsin Central Railway and which would build a line west, connecting with its main line from Chicago to Minneapolis.

The Country Club.

In the Good Old Summer Time.

Club Entrance.

Atlantic City, N. J.

Hubert Somers Makes a Bluff.

Work on pavements has practically ceased for this season, although it might have been kept up for a longer period if it had been possible to foresee the kind of weather that would prevail this fall. So far there has been practically no snowfall and no cold snaps. Much work is contemplated for next season, however, and the work will commence early in the spring. The paving proposed includes many blocks of brick, including a stretch on Farwell avenue.

An active canvass is being made to raise funds for the erection of a great auditorium in Milwaukee, to take the place of the Exposition building, which was burned last June. It is proposed to erect the building partly with funds raised by citizens and the balance from the city treasury.

All local dealers have been kept busy during the past season supplying orders for new buildings and local brick makers have found a ready market for all of their output. during the year 1905, greatly exceeding its record of the previous year. The total value of building permits issued for the year was $10,859,815 as against $9,686,617 for the year before. A very large amount of money was spent in the erection of residences, particularly in large apartment houses and flats. There was also a very material gain in the erection of factory and shop buildings. The total amount spent for office buildings was $730,000 as against $261,000 a year ago. The indications are that the present year will see a continuation of the same activity. Brick is being very largely used in structural work, particularly in the erection of the larger apartments and factories.

The National Association of Cement Users held its second annual convention in Milwaukee from January 9th to 13th inclusive. It was largely attended by manufacturers of cement blocks and cement block machinery.

The board of directors of the Fond du Lac Pressed Brick Company held a meeting the latter part of December at Fond du Lac and made plans for the enlargement of its business. New machines will be ordered to make provision for a large increase in the output. A 150 horse power Corliss engine will be put in and a new heater used for manufacturing brick. A pulverizer has been ordered, capable of pulverizing enough clay to manufacture 60,000 bricks a day. The company has had a prosperous business during the past year.

BADGER.

EARNING AND SAVING.

The time to begin to save money is when you begin to earn it.

Lay by a part of every dollar you earn, and you are fairly on the road to independence and fortune.

A little thought will show you that you can never hope to get on in the world unless you save money.

Money is necessary at every step in your journey through life.

You can't buy a home without it.

You can't go into business without it.

You can't be comfortable, if anything happens to stop your income, without it.

Your old age will be miserable without it.

All your life long you will need money, and the only way to make certain of having it is to save while you earn.

THE IOWA BRICK AND TILE ASSOCIATION.

REPORT OF THE TWENTY-SIXTH ANNUAL CONVENTION OF THE IOWA BRICK AND TILE ASSOCIATION, HELD AT DES MOINES, IOWA, JAN. 10TH AND 11TH, 1906

First Session.

Wednesday Morning, 10:30.

President C. A. Rawson: The Twenty-Sixth Annual Convention of the Iowa Brick and Tile Association will come to order. The Hon. H. W. Mattern, the mayor of Des Moines, is with us this morning and desires to say a few words of welcome.

Mayor Mattern's Welcome Address.

Hon. H. W. Mattern: Mr. President, and members of the Iowa Brick and Tile Association, it gives me great pleasure to assure that you are welcome to our city and our hospitality, and to offer good fellowship. The clay industry is one of the principal industries of our city, hence, it is proper and very fitting that you should have come here for your twenty-sixth annual meeting. I congratulate you on your good attendance, it demonstrates to me that you are here for business, and I do not want to take your valuable time. However, I hope your deliberations may be profitable and productive of much good. Let me again assure each and every one of you that you are welcome to the very best we have, and hope you will come often. Our latch string hangs on the outside at all times. (Applause.)

President Rawson: I will call on Mr. Harry de Joannis, of Chicago, to respond.

Harry de Joannis: Mr. President, and gentlemen, the responsibility of answering the Mayor is very great, inasmuch as after having searched through the libraries exhaustively, I did not find a single text book on how to respond to mayor's addresses, I am somewhat at a loss just what to say. I am like the little boy who was asked to define the word "responsibility." He said, "If I had but two buttons on my pants, and one gave away, the responsibility would be on the other button." I am very much afraid something may give way, metaphorically speaking, but we are very glad to have you welcome us, and your welcome is trebly welcome. First, because you welcome us as Mr. Mattern; second because you welcome us as the mayor of the city; and third, because the welcome you extend is that of the city of Des Moines. We know very well that our industry is one of great importance, and we are glad to have it recognized officially at any time. The body that is here before you is a body of men sentenced to hard labor for life, and we are now working out our sentence, and we are glad to have any consolation at any time offered. (Applause.)

President Chas. A. Rawson.

President Rawson: I think we ought to state the reason for having these addresses this morning instead of this afternoon, as given on the programme. Governor Cummins is going to speak to us this afternoon. We expected him to be present at the banquet but he finds he cannot be with us then, so will talk to us this afternoon at two o'clock, so we thought it would be well to have this part of the program this morning. The only thing on the programme for this morning is the enrollment of members and the appointment of committees.

J. L. Raney, Fairfield, Iowa: I move that the chair appoint a committee on resolutions, and one on nominations.

Motion duly seconded and carried.

President Rawson: I will appoint on the committee on resolutions, W. W. Lewis, Williamsburg; C. J. Holman, Sargeant Bluff; and O. C. Pixley, Des Moines. Committee on nomination, I will appoint D. A. Morey, Ottumwa; C. F. Green, Sioux City; and W. J. Goodwin, Des Moines.

These committees will get together and report at the proper time. If there is nothing else to be considered, I would like to read a little paper I have and so get through with it; it weighs on my mind. (Laughter.)

PRESIDENT RAWSON'S ADDRESS.

To the Members of the Iowa Brick and Tile-makers' Association:

You have just been welcomed to our city by our esteemed mayor, Hon. Geo. W. Mattern, and while it is not my intention to take up the time of the convention with any extended speech, it seems fitting that I should add to his welcome a very cordial greeting to our brothers in the trade from every man engaged in the clayworking industry in the city of Des Moines.

In order that you may know how many there are of us so engaged in Des Moines, I will say that we have fourteen working plants here making a diversity of products, including paving and building brick, sewer pipe, drain tile, hollow blocks, conduits for electric wires, dry press brick, etc. We have more than 1,200 men directly employed in the clay plants here, and we could count up several hundred more if we should include the number of men employed in mining the coal for our plants and handling the shipping of the finished ware. We hope to have the pleasure of showing you some of these plants in action on Thursday afternoon.

I think it is about five years since this city has had the honor of entertaining this association, and I know there has been some criticism of the attitude of Des Moines towards the convention, but whether or not this criticism has been just we want to say to you that we make you most welcome to our city, and that we hope to make this convention the best the association has ever held. We hope to make it so, not by any extravagant entertainment, but by joining heartily with you in all matters concerning the welfare of the association.

As we all know, there has never been, and probably never will be, any semblance of a trust or trust methods in the brick and tile business of this State, the rule always having been every man for himself. Very naturally this condition has produced and is bound to produce some little friction and distrust of our competitors' methods, and it seems to me the chief office of a convention of this kind is to, as far as possible, do away with such friction and distrust among members.

While we expect to find that the papers that will be presented in this convention will be most interesting and instructive, it has always seemed to me that perhaps the largest benefit in a meeting of this kind is not what we learn from the papers presented, but from a free intercourse among the members, the exchange of ideas and the getting acquainted with our neighbors, whom we have always looked upon as our competitors only, and whom in nearly every case we find upon personal acquaintance to be also our friends.

The Members of the Iowa Brick and Tile Association, Grouped in Front of the Elks' Hall, DesMoines, Iowa.

There is an old, old story that I have no doubt most of you have heard, but one that seems to me to illustrate this point, so I will venture to tell it again. As I recall the story, it happened in a convention similar to the one we are attending today, and I take it for granted it happened on the last day of the session. It runs something like this: Two members of the association were sitting in the lobby of the hotel talking together, when they were joined by a third member, who was a close neighbor and competitor of theirs, and with whom they had had some serious business battles. This third member, after talking with them a few minutes, excused himself, and as he walked away one of the men said to the other, "Blank seems to be a pretty good fellow after all, doesn't he?" and the other replied, "Yes, but do you know that before I met him here at the convention I thought he wore horns."

I know from personal experience that a competitor who is known to you only through your knowledge of his prices and business methods, such knowledge having usually been gathered by you, through hearsay only, and that from interested buyers, is the one we all fear and not the man who, while he is our competitor, is also our I say, let's get together during the next few friend through personal acquaintance. So days and get acquainted with our competitors. I venture to say that you will find him to be a man like yourself, trying to make the best ware for the least money and trying to sell it for the best price you will let him, and trying, like yourself, to make an honest living for himself and his family.

I believe the brick and tile manufacturers can make no better expenditure of time and money than to visit the plants of other clayworkers. I know from my own experience that I have never yet made such a visit without finding in the other man's plant some idea that I could work over to fit conditions in my own plants, and that would make big returns on the time and money I had spent in making the visit.

Our business, like every other, has its ups and downs, its good and bad years, but it seems to me that we can all look forward to the coming year with confidence. Crops in Iowa are good, business of all kinds is prosperous, and if we conduct our business in a business-like manner we should be able to find ready sale for our output at a reasonable price

The new drainage law, now that it has been found constitutional, ought to make a better market for drain tile, not only the larger sizes, but, later on, for smaller sizes for lateral work. Personally, I am not engaged in making any kind of brick, and am not so familiar with the prospects for a good market for that class of ware, but there is one thing that has always struck me about the brickmakers, and that is their continual look of prosperity.

There is one subject that I should like to have discussed in this convention, if not on the platform, then on the floor among the members, and that is the question of cost price. I find that it is a common error, especially among manufacturers new to the clay industry, to figure their cost price on paper at the beginning of the year rather than from their bank balance at the end of the year. Any one can become rich by sitting down with paper and pencil and figuring how many brick and tile his machine will turn out in an hour, and what he can sell them for, but it will bother him some to find the money at the end of the year.

I hope we may none of us figure our cost in that way, but that we may make due allowance for interest on our investment, depreciation, and a just return for our labor in management. If we know what our goods really cost us, we are much more apt to get a fair selling price for them.

In this connection I should also like to caution our members against getting scared over market conditions early in the season, and making a low price that will set the standard price for the whole season. We have no need to worry because we find ourselves with a few brick and tile on our yards in February and no orders coming in. I venture to say the same stock will look mighty good to us in April and May, when the season's rush opens up.

In closing, I want to say a good word for some of the men who have joined with the Des Moines clayworkers in giving of their time and money to entertain the members of this association. These are the men who are selling to all of us coal, machinery, oil and all kinds of mill furnishings and repairs. I think you will find representatives of all these firms among you, and I want to say that I am sure you will find they are all good fellows, ready and anxious to give you a square deal on anything in their line. (Loud applause.)

W. H. Brecht, Des Moines: I would like to suggest that if there are any of the members here who have not registered, they will please do so before they leave the room. There will be considerable confusion this afternoon, and we will not have much time, so if they will take care of that right now it will be a convenience.

President: That is a good suggestion, and we now stand adjourned until this afternoon at 1:30.

Second Session.

Wednesday Afternoon, Jan. 10, 1906.

President Rawson: Gentlemen, you will please come to order. I have the pleasure of introducing to you, Hon. A. B. Cummins, the Governor of Iowa. (Applause.)

Address of Governor Cummins.

Mr. President and Gentlemen of the Association: The introduction was commendably brief, anyway. (Laughter.) There is but one thing at this moment of which I feel altogether sure. I must either change my hours of eating or my hours of speaking. I have just finished a very hearty dinner, and I have discovered through long experience that there are two things that do not dwell in harmony in the same enclosure, one is an undigested dinner, and the other is an undelivered speech. I never rise to speak immediately after a meal in recent years without thinking of a little incident that happened to me in the summer down in Adair County. I have told it several times, but it is altogether too good to keep. I was to speak to an Old Settlers' Association at Union Grove, there was no town, just a beautiful grove, one of God's temples. I rose very early in the morning, and took a train leaving Des Moines about six o'clock. I went to Stuart, and drove from Stuart south about eighteen miles and arrived at Union Grove just at dinner time. I was ravenously hungry, I cannot remember a time when I was so hungry as I was that morning. They took me to a farm house in that vicinity with some friends and we sat down to one of those royal, rich and unsurpassed dinners that grace the tables of our prosperous farmers in this State. The dinner was all on the table at once and that is a custom I have been trying to revive ever since in every speech I have made. I am an advocate of that reform of getting everything on the table at one time. The way I tackled that dinner simply surprised that good housewife who was waiting upon us. I mowed a swathe right across that table and she seemed to be full of wonder that a man from town could have such an appetite. I think she was glad to see the destruction go on, so full of hospitality are those good people, but she grew anxious, and finally she reached a point where she could restrain herself no longer and she laid her hand on my shoulder and said, "Governor, I have never heard you speak, but if you can speak as well as you can eat, you are a dandy." (Laughter). I immediately told her that I made no such pretensions, that she was then witnessing my highest, and best and completest performance. I have recently been through that same experience, and therefore you must expect a rather torpid brain during the few minutes I will take your time.

I suppose I know less about the pipe and tile business than any man alive, although I am connected with it by marriage. I am a sort of father-in-law to the pipe and tile business. I have a great interest in it, however because there are two little fellows of whom I think more of than any other fellows in the world who are being fed and clothed out of the tile and pipe business, and I hope from the bottom of my heart that it may be very prosperous.

You are all citizens, I take it, or at least most of you, of the State of Iowa. You are interested in its growth and development. You belong to a commonwealth that I think stirs the pride of the American citizen as deeply as any State in the Union. We have already acquired a prominence in one field of human industry not surpassed by any other State in the Union, or any other country in the world. The Providence which created the universe gave us that prominence and it never can be taken away from us. I believe it to be true that from an agricultural standpoint there is no like territory upon the face of the earth. You can go upon the quest with the world's surface as a field in your investigations, and you cannot find civilized man has yet found any area equal to the area of our State so fertile, so productive of the things which contribute most to human happiness as that area that we call Iowa. Our soil is more continuously fertile, our soil more easily yields her virtues to the labor of the husbandman than any other soil in like extent in all the world. Therefore, Iowa stands justly and naturally at the head of all the States in her agricultural production. And I believe she always will stand in the front rank in this particular field of activity.

Vice-President J. L. Stevens.

But it is not enough, gentlemen, that we shall be prominent and distinguished in one particular line of growth and development in order that a people like ours may grow, in order that we may continue to be prosperous. It is essential that our industries be not only profitable, but that they be diversified, and what we need at this time, and what we have needed for years in this State more than any other thing is the development of our manufacturing interests. We have some manufacturing, you gentlemen are the best evidences of the great development and the great growth in the manufacturing interests, but we have not enough manufacturing in the State of Iowa to properly diversify and vary the industries of the people. As I have looked at the situation, there is no place in the United States more and better fitted to carry on manufacturing than in the State of Iowa. We have abundant and reasonably cheap fuel, and that is the beginning. It is the motive power of all manufacturing interests. Why is it, why is it, that we have not grown as we ought to have grown, it seems to me in the manufacturing field? Now, what I am about to say will probably not apply to your business, because, as I understand it, it is largely confined to the State of Iowa. But if I have understood the conditions, the surroundings, the people of the State of Iowa and our business, the reason we have not leaped forward in this growth as is consistent with the knowledge and the tendency and the capacity of our people, it is because in the distribution of anything that is to be distributed from the State of Iowa into other markets than those of the State of Iowa, we have been for years and are today discriminated against with respect to railway rates. (Applause.) I do not say that this discrimination is intentional. It is one of these things that has grown up, and as I have said many, many times, it seems to me that the great transportation masters of the country have agreed that Iowa shall retain her prominence in agriculture but shall not attain prominence in other respects. And the campaign I have been fighting for some time now, and which deeply interests me and ought to interest every citizen of this State, is to take such measures, reasonable measures, as will remove from the State of Iowa the burden under which she is now staggering in a manufacturing way, and I hope that the knowledge and energy of your Association will be added to the force and impetus of this mighty movement which is going forward from the people of one border of the country to the other.

Because you are interested in a particular line of business, I would not pretend, I could not be expected to say anything that would help you in that special enterprise, but you are members of a greater Association than the Association of your business in the State of Iowa; we are all members of the magnificent association of men and women known as the State of Iowa, and we are all members of a still greater, more pretentious association known as the Republic of the United States (Applause) and your duties as citizens, as members of these associations are infinitely more sacred, and infinitely more important than can grow out of any other business. We have come to know, gentlemen, in this country in the last few years more than ever before, how intimate was the connection, the relation between the government of our State, of our County, of our City and of our Nation, and the ordinary business in which we are engaged. There can be no enduring, no lasting prosperity for this country that is not affected by impartial laws adopted by the several governments under which we live and the rigid, effectual administration of these laws. We are too apt to forget in the busy lives we lead, too apt to forget in the absorption of these enterprises of ours demanding all our thought, too apt to forget that over all and above all these things, and down beneath all these things must be a righteous, organized society. So, I repeat that as you go forward, lifting up the particular questions and problems that grow out of the business in which you are engaged, as you are making that business prosper and grow, that you will not forget from time to time these mightier problems which concern us all, and that you will do these things that will tend to the common good and the general welfare. There never was a time when it was so hard to govern society, as it is now. We have become a part of a complex and interlaced civilization. We have reached a point where it seems that some influences that are selfish and sordid are at work on the courts of our country. We need the vigilance which the old patriot declared to be the "price of liberty," more at the present time than we ever needed before. I do not mean that we need vigilance to keep manacles from the wrist. I do not mean we need vigilance to prevent the suppression of free institutions, but I tell you we need vigilance to see that every man in this land of ours, whether he be rich or poor, high or low, white or black, shall have his fair and even chance in the struggle for existence. (Loud applause.)

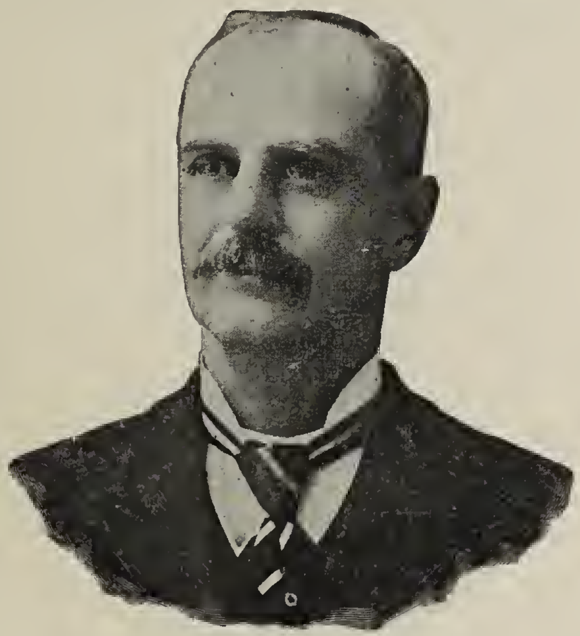
President Rawson: I know we all feel grateful to the Governor for coming and speaking to us at this time. Now if there is no one else desiring to register at this time, we will take up the regular programme. The first paper on the programme is by Mr. O. C. Pixley, of the Des Moines Clay Company on "The Manufacture of Hollow Block."

MANUFACTURE OF HOLLOW BLOCKS.

By O. C. Pixley, Des Moines, Iowa.

Mr. President and Gentlemen:

A few weeks ago I was asked to deliver a paper on the subject of "Hollow Building Brick." I assure you that it is a pleasure to say what little I can in behalf of that subject. Our president has a way of helping people out, and he helped me to decide what to say on this subject. He said, "You know, Pixley, you cannot say anything new on the subject; you cannot be expected to. For twenty years, at every convention, there has been a paper or two on the subject. The clay papers have written the subject up and you have read them, and we have all gone over them until there is nothing new to be said." So I started out with the idea that there was nothing new, but I would try to give you something interesting, at least.



Ex-President O. T. Denison.

Quite a number of years ago, when I was a college student over in Ohio, I listened to an after-dinner speech delivered by a man who is witty and bright along that line of work. I understand that since recent investigations in New York city he is not making a specialty of that line of work. "Brevity," he said, "is the soul of wit." Now, I have tried to put no wit into this speech of mine, but after 12 o'clock last night I tried to make it brief.

Some years ago I had a friend in Chicago who was fortunate enough to sell out his clay business to a trust, and he cleared several hundred thousand dollars. The next day I was in conversation with him, and he said: "Pixley, do you know what I would do if I wanted to make a million dollars? I would go into the hollow-block business. A man can make money in that business and he don't need to have any brains." Of course, I don't know whether he wanted a million dollars or not, but he was well qualified so far as the last requisite was concerned, but he would have found that it takes brains to go into the clay business.

This is the first convention of this association that I have ever addressed or have ever attended. I met some of you last night, and know what your likes are, and I will probably know more what your likes are before this meeting is over. I do not know whether you are superstitious or not. I am not usually superstitious, but I wakened one morning, not long since, with the number 93 before me. I knew I was not born in that year or did not belong to a football or baseball team, and could not think what it meant. I hurried through my breakfast and hurried out to take a car to the office. Just as I went out the gate the car went past. I simply fell in back of it and took a sprint to the corner. For an old man I made quite a sprint. I ran through that snow and slush and looked up, and there was the conductor laughing at me—he was enjoying that run, but he had never thought of stopping at the corner. I was going to say something to him that he would remember, but on the back of that car was 93. I simply turned up my collar, put my hands in my pockets and walked to the office. Before I got down town I met that car going back, but I never paid any attention to it. When I got into the office my stenographer said, "You are wanted to call up 93 on the 'phone." "There, that is the solution of 93," I said to myself. I sat down in my chair and called up 93, but it was another gir—I mean another party altogether, nothing to do with 93. That noon a customer came in and I wanted to take him out to dinner. I have a habit at a time like that of looking in my pocket first, so I put my hand in my pocket and pulled out a fifty-cent piece, four dimes and three pennies. (Laughter.) I am not superstitious, but this thing began to worry me. Well, I took him to dinner, and then, as he was going away on the train, I went down to the station with him. We had about fifteen minutes to wait, and one of those big Rock Island engines came through and I looked over that train, and there were about fifty loaded cars being drawn by that engine, and I reached up my hand to touch that engine, and there was 93. I went back to the office, and the first paper I picked up contained an article on the locomotive engine. I read it through and it said that scientists have been working for years and it had only been able to get 7 per cent. of the power of the coal and apply it to those great wheels—93 per cent. was being lost to spoil the washings and lawns and all that.

I went down on the street and looked up at our building. There was a great wall of solid brick, towering story after story. It was a grand spectacle, and, gentlemen, I looked at it and wondered. I went up to my office and consulted my books, and I was astonished to find the sustaining power of that solid brick wall was greater than any human mind can comprehend. I was also astonished, and I think you will be, to find that 93 per cent. of the strength of that brick wall was taken up sustaining its own weight. Science has done very little for the old engine. It can do very little to help it when 7 per cent. is all that can be got out of that coal, but science and a little gray matter and knowledge on the part of the brick man has been able to sustain the solid brick wall, and no longer is it necessary to build a wall and say it is necessary to have 93 per cent. of the strength of the wall for holding its own weight. We can build a wall that weighs probably one-third of what a solid wall will. You can make a stronger wall of hollow clay block than if you build it of solid brick. I will take that up later if you wish me to. Science has done other things to that wall. It has made openings known as dead air spaces, and that space is considered very valuable. If you build your house of hollow clay blocks you get a wall that will shield you from the cold weather in the winter and will protect you from the heat in the summer, and you will also be dry. I have a friend who built a house up on the avenue quite a while ago. He said he put in the best brick he could find, the Flint paving brick, and when he went down into his basement he wanted to be dry—that is, he wanted the basement to be dry—and so he wanted a solid wall. He made that wall about two feet thick of solid brick laid up with cement mortar, but last winter we had two weeks of zero weather, and it crept into that wall, and the result was that in about two weeks inside of that wall was colder than the atmosphere outside. The moisture in the atmosphere had come out in those brick just as the frost does on window panes. He went down there about 4 o'clock one afternoon and his wall paper had all gone down to the bottom, and he told me confidentially that he said things he don't want me to repeat.

There is one thing I wanted to bring out. I don't like to say anything about a man when he is down, but I want to say something on the cement-block proposition. I have been asked if the cement-block proposition has seriously affected the hollow-clay building block. I have always said that I do not consider them competitors. I have looked into the matter a little more carefully the last day or two. They have had a great effect on us, and in the next two or three years they are going to have a greater effect. I do not know where we have lost an order, but I do know several places where we have received an order where cement block had been used. I think we owe a debt of gratitude that cannot be expressed. I do not believe we realize the thousands of dollars that have been expended in demonstrating the hollow dead air space in building material. In nearly every town in the United States there has been a cement-block machine man looking for an easy mark that he might separate him from his money. He has done that gracefully, and he has gone out into the by-ways and hedges and explained to them what a wonderful material it is, and the one burden of his song is that dead air space. He has educated the whole United States up to the dead air space. He cannot say the cement block is a beautiful thing in a building, he cannot say it is a cheap thing, that it is everlasting, but he has told them of that dead air space. I consider at the present time that the cement-block business has done advertising for the hollow clay-block man that the hollow clay-block man cannot do for himself. We could not have advertised this business as the cement-block men have done, and in the cute way, too, with the money of the fellow who buys his machine. If the cement block is a failure, who is going to reap the harvest of this advertising? You take a man who has a cement building, and that building is not a success; it disintegrates. He may say some very cross things detrimental to the block or the man who sold the machine, or the man who made the block, but you cannot get him to say one word against the hollow space in the block. He has been educated up to it, and believes in it. There is where the hollow clay-block men comes in. You show the man the hollow clay block and demonstrate that it will stand the weather, and will not absorb moisture, and he will build of hollow block. If you can turn out a block that is vitrified, a block that is shapely, with good corners, non-absorbent, and show the man that it is everlasting, and he will say, "You have my order."

There are some men at this convention who are thinking of going into the hollow-block business, and many of you are in the business, and if you are you probably know more about it than I do. I have no doubt you have all heard the story of the Dutchman who sold a 'coon dog to some boys, and the boys brought it back to him and told him it was no good as a 'coon dog, and they wanted their money back. The old Dutchman said, "Now, boys, that is funny. He is not worth a cuss for anything else, so I supposed he must be a good 'coon dog." (Laughter.)

Now, if you have a clay bank that is not worth a cuss for anything else, don't suppose you can make hollow block. If you have a clay that is a little better than the other fellow's, that will stand more heat, more abuse, then you can hope to succeed with the hollow block. You have got to have a clay that will stand abuse, and then not give it to it. You have got to have a clay that, when it goes through the dryer, will not crack. You have got to have a clay that, when it goes through your kilns, will make a good block. You can make a hollow block out of most any clay, but not in commercial qualities. You burn your clay up to a certain time, and your burner goes up and takes a block out of the top of the kiln and it is all right, and then he hooks one out of the bottom that is just a nice salmon red (you all know what they look like), and says: "Here, if I give this kiln any more heat I am going to spoil that top block, and if I don't the bottom block will be spoiled." He is "between the devil and the deep sea." You have got to have a clay, if you succeed, that you can give enough heat to until the bottom block is properly burned so that you can keep drawing it down yet not hurt the top block any, and so get the whole kiln full of good blocks in order to make a success of it.

Prof. S. W. Beyer, Ames, Iowa.

The clay business is not the same as any other. It is a dirty work, as you all know. You go out to a clay bank when it is raining and it is not very pleasant. You take the clay up to the factory, and it flies all over everything, like a flour mill. You can't go into the plant with a new $2.00 overcoat but you are sure to spoil it. (Laughter.) Nevertheless, when New Year's day comes and you are in front of the fire, and you know you have succeeded in getting some of that clay dust and the other dust in the bank, so that the bank balance is on the right side, I think we all think we are all fortunate to be in this business.

I do not think that there is much that I can say. I will be glad to answer any questions that may be put. If I cannot answer them, there are others that can. I want to say one more word. There is an old gentleman down in Indiana, a pretty good friend of mine. I used to go to his place, and I learned considerable from him. That old fellow could do things that I never saw any other fellow do. In every clay plant there comes a time when the clay will not run out right. Then that old man would get down on all fours and squint along with one eye, and it would be all right. I have got so I can do that, too. (Laughter.) I want to say you can not expect to succeed with the first kiln or the second kiln, but if you will put in your own money, and some one else's money and put in your time, and make that block like it ought to be, you can make a success. (Applause.)

President Rawson: If any one desires to ask Mr. Pixley any questions, now is the time. If he cannot answer them, we will find someone who can. We will be glad to hear from any one on this subject. I think we ought to hear a few words from the vice president of our Association, John L. Stevens, of Boone, and I will ask him to come up to the platform for a few minutes.

Vice President Stevens: Mr. President and Gentlemen of the Convention, I hope that none of you will suspect that I responded to that call because I could give you any information in regard to the brick and tile business. Last year I was not able to be present, and I felt complimented when I discovered that you had made me your vice-president, and therefore I would be an ingrate if I did not at this time at least take the opportunity of thanking you for the compliment. I arrived in the city yesterday, and owing to misinformation that one of the members gave me thought the first meeting was yesterday. I met this member on the train, and he asked me if I was not going to the convention. I told him I was but that it did not meet till today, and he said, "Oh yes, the preliminary meeting is this evening and I have tickets." (Laughter.) So I came down, and he escorted me to a large auditorium. There was a vast concourse of people. He took me down to the front row of seats, and introduced me to the President of the Association and various other members and I thought for a time that I was in the convention. Laughter.) We had an exhibition of clay moulded into beautiful form, very dextrous and elastic, and after it was over, I was told that the real meeting of the Association did not occur until today, (laughter) so I was right after all. I think Des Moines has treated us very nicely, and we all appreciate the way the Des Moines clayworkers have set out to entertain us. The information I have got on the hollow block business I have no doubt will be of great value to me. We started in this year at Boone and made a few blocks. I had visited Mr. Pixley three or four times and he has shown me the most beautiful blocks I have ever seen, and I hammered away at our directors until they got some dies and we tried our hand, and I fully agree with him that the hollow clay block is the best block in the world if you get it right, and we may continue to try to get ours so we will get a block to burn so it will not have any cracks or crooks in it. Some years ago we entertained this Association at Boone and friend McHose who is the pioneer in our part of the country in the brick and tile business, and the only man I guess who has made any money in it, as you will remember had things in charge. We really owe him a debt of gratitude for having given us a little enthusiasm in our section of the country in developing the clay industry. It seems to me that as this organization has met year after year, while I have not attended all the meetings, it seems to me I can see a growth in the sentiment to build up Iowa's industries, to build up her manufactories, and especially to get together to exchange our views and to gather knowledge from contact with each other. I do not pretend to try to give you any information on kilns, or brick, or how to run a plant. We are simply learning by experience in our company, and we came down here to get a little information from those wise heads who do know something about the business, and to have a good time incidentally with the boys, particularly at the preliminary meetings. (Laughter and applause.)

President Rawson: The next number is a paper by Mr. Hallett, but he is not in the room at present. Prof. Marston of Ames is here and has a paper on brick pavements which we would be glad to have him present at this time. (Applause.)

Prof. Marston: I really feel that I owe an apology for being on this programme, but I hope you will forgive me.

BRICK VERSUS ASPHALT PAVEMENTS IN IOWA.

By A. Marston, Ames, Iowa.

Mr. President and Gentlemen of the Convention:

For the last few years one of the violently debated questions of public policy in many of our Iowa municipalities has been brick versus asphalt for paving. In some cases one material has finally been selected, and in other cases the other. Both as brick manufacturers, as taxpayers, and, above all, as public spirited citizens, the members of this organization are greatly interested in the matter. All of us wish the right decision to be made in each case, no matter which material it favors.

In brick and asphalt we have two very different paving materials, both, however, having most excellent special qualities, and both suitable for the construction of most excellent pavements. Together they are largely displacing other paving materials in this State.

Brick first came into use in Iowa about 1889. In 1900 and 1901 a committee, of which the writer was chairman, collected data of brick paving in Iowa, which data were published in the form of a sixty-page pamphlet, containing the opinions of the engineers of all towns in Iowa having pavements, on all the principal features of brick pavements. A few copies still remain for distribution.

At the time this bulletin was published there were 4,030.696 square yards of brick paving in Iowa, and only 192,884 square yards of asphalt. That is, the asphalt was only about 4¾ per cent. of the brick.

I do not have at my command figures of the construction of brick pavement in Iowa since 1901, but a statement furnished by the Barber Asphalt Company shows the growth of asphalt paving in Iowa since it was first introduced, in 1896, to have been as follows:

1896, 11,861 square yards; 1897, 54,612 square yards; 1898, 13,188 square yards; 1899, 28,041 square yards; 1900, 24,547 square yards; 1901, 165,399 square yards; 1902, 110,728 square yards; 1903, 227,603 square yards; 1904, 96,030 square yards; 1905, 184,000 square yards. This gives a total of 896,009 square yards of asphalt paving in Iowa at the present time, as compared with somewhere from 4,000,000 to 5,000,000 square yards of brick.

Prof. A. Marston, Ames, Iowa.

There have been a few cases of failure in Iowa of both brick and asphalt pavements, mainly in each case among the first pavements built. In the case of brick, the main causes of failure were the early use of soft, inferior and uneven brick, such as would now be rejected, or cheap, weak foundations. In the case of asphalt, the causes of failure were poor asphalt or poor workmanship, or poor foundations.

For good asphalt pavements the asphalt and other ingredients must be of the best quality, and they must receive the most skillful treatment during construction. In some of the early asphalt pavements in Iowa disastrous experiments were made with new material and with an inferior type of construction. Ottumwa had a disastrous experience along this line, and Sioux City has had trouble with one of the early streets. Marshalltown has had trouble with a recent pavement on one street, which the contractors attribute to the use of the old weak macadam foundation of the former pavement. The foundation of an asphalt pavement should attain great strength at an early date, for even before the pavement is put into actual use the foundation must sustain very heavy loads from the steam rollers used in construction. Unless the foundation is strong and unyielding, the asphalt will not receive enough compression during construction.

In spite of the few early failures mentioned, it has been amply demonstrated in Iowa that most excellent pavements can be built with both brick and asphalt. It has not yet been ascertained by the actual wearing out of pavements in Iowa which material will outlast the other, or withstand heavy traffic better. In fact, it is difficult to make a fair comparison as to these points, since the traffic may not be the same on the streets compared, and since the durability depends so much on the quality of the particular brick or asphalt used, on the design of the particular pavement, and on the skill and honesty of its construction.

Starting out, then, with the demonstrated fact that a most excellent and durable pavement can be constructed with either material, the question remains, how shall we decide between brick and asphalt in any particular case? To this question no absolutely general answer can be given, for under some conditions brick should be chosen; under others, asphalt. Each material has advantages and disadvantages peculiar to itself.

First, as to *cost*. Asphalt is in general more expensive than brick. In the case of a first-class brick pavement on a concrete base, the difference in price in favor of brick ranges from almost nothing up to 30 cents or more per square yard, averaging probably 20 cents to 25 cents per square yard. For a street with pavement thirty feet wide, this would amount to about $4,000 per mile. In the case of a one-course brick pavement on a macadam foundation, the difference in price averages about 50 cents to 55 cents per square yard, or, say, $9,000 per mile in favor of brick. These relative prices vary greatly in different places, and it should be noted that in 1905 some very low prices were bid in Iowa for asphalt.

Second, as to *relative durability*. We may regard this point as unsettled in Iowa. The advocates of each material claim greater durability. The city engineer of Sioux City, which city has had the longest experience with asphalt in Iowa, thinks brick the more durable. Both pavements are very durable, if well made and maintained.

Third, as to *smoothness and freedom from noise*. Here asphalt has the advantage, and it is usually this quality which leads to a preference for asphalt when it is preferred in Iowa.

Fourth, as to *slipperiness*. Here brick has the advantage and is frequently preferred on steep grades on this account.

Fifth, as to *cleanliness*. Asphalt can be cleaned more thoroughly, but if not cleaned is injured by moist dirt, which would only protect brick from wear.

Sixth, as to *sanitary qualities*. I would make no differences between the two materials.

Seventh, as to *resistance to hauling*. Traction tests made under my direction show that there is little difference between the two materials. Brick generally shows a little less traction resistance, especially in summer, since the resistance to hauling on asphalt increases greatly as the temperature rises in summer so as to soften the surface.

Eighth, as to *maintenance*. The maintenance and repair of brick pavement require only ordinary skill, and can readily be attended to even in small towns. The maintenance and repair of asphalt, on the other hand, require special appliances, and a high degree of special skill. No city in

Iowa has, as yet, attempted asphalt repairs itself, such work being done in every case so far by the asphalt contractor. In the case of small towns, repairs are apt to be especially costly and subject to delay on account of the necessity of getting in an outside contractor for a small amount of work. The imperfect cleaning of streets in small towns may injuriously affect asphalt.

Ninth, as to *encouragement of home industries.* Here the advantage is with brick, but even in the case of asphalt most of the money is spent at home.

Tenth, as to *skill required in construction.* The advantage is greatly with brick. Common labor answers in the main for brick pavement construction, though skilled foremen are needed. The apparatus required is simple. In the case of asphalt an expensive plant is needed for preparing and mixing the materials, and the utmost skill and care are required throughout the work. A mistake anywhere may be fatal to success.

Eleventh, as to *supervision and tests required to secure good work.* Here, again, the advantage is all with brick. Any city engineer is prepared to test the brick according to well established methods, and their close inspection as delivered is a simple matter. The other materials, also, are readily passed upon, and every step of the work can be clearly specified and closely inspected and supervised, with the certainty that faithful supervision will produce good results. In the case of asphalt, on the other hand, there is at present not a single testing laboratory for asphalt in Iowa. It is true that the Engineering Experiment Station at Ames proposes to equip for such tests immediately, but even then the processes of testing are more difficult, and not so well standardized as in the case of brick. The methods of construction, also, in the case of asphalt pavement are not well understood by the average engineer, who cannot therefore so supervise the work as certainly to secure good results. Heretofore, therefore, reliance for good results with asphalt has been placed mainly on the contractor's guarantee for a term of years, a guarantee which will be carried out just about as long as the contractor thinks best for his own interests. On the above accounts, asphalt payement construction is mainly in the hands of large companies, rather than individual contractors, and there has been little competition.

In this connection, we have heard much about undue influence exerted on property owners and councils by the agents of asphalt companies. While I am not one of those who believe that our public officials are, in general, corrupt, yet it is evident that a systematic campaign of argument carried out by an organized asphalt company might very frequently win the day for asphalt, though brick were equally good. Who is there to work as hard for brick? On the other hand, the councilman who, by political influence, secures the appointment of an incompetent brick paving inspector from his ward, expecting payment in votes, should be considered as corrupt as if he were bribed with money.

So far I have been giving you my own views on the subject of brick versus asphalt, but now I will offer in evidence the views of men whose opinions must have more weight, viz., the city engineers of Iowa, who have had direct experience with both asphalt and brick paving. It has been my good fortune again to be connected with an investigation of Iowa pavements, in this case with asphalt, as formerly with brick. The results are to be embodied in an asphalt paving bulletin similar to the one already published on brick.

To the city engineers of all cities in Iowa having asphalt pavements, blank forms were sent containing a large number of questions concerning the important features of asphalt paving. One of these questions asked whether asphalt had proven satisfactory, whether it stood heavy traffic as well as brick, and whether the present tendency in that town favored brick or asphalt. The answers received were as follows:

Cedar Rapids.—"Our asphalt is very satisfactory. We have none that is subjected to what would be considered heavy traffic."

Davenport.—Asphalt just constructed.

Des Moines.—"Our asphalt pavements have been very satisfactory, and show but little wear. In certain localities here asphalt is favored, and in other localities brick pavement is preferred."

Fairfield.—Just constructed.

Fort Dodge.—"Nearly everyone here is very well pleased with it so far. Stands traffic well. Shows tendency to crack and check up in cold weather."

Indianola.—"We have no other kinds in Indianola. My observation of this paving in other Western cities and towns is that asphalt will not stand the traffic that brick will, provided the brick be good, sound, hard burnt, but not over burnt, and laid on the same foundation that the asphalt is laid and properly cushioned, the brick being easier to maintain as it can be done by the ordinary city force."

Marion.—No report.

Marshalltown.—"Not altogether satisfactory. Some streets stand traffic well, but our Third avenue, which has heavy traffic, was partly resurfaced in 1905. Present tendency, owing to endless litigation, is against asphalt."

Mason City.—No report.

Ottumwa.—"One asphalt street carries heavy traffic. All the brick and coal for domestic use hauled over it. Brick is generally preferred, as many of our grades are steep. Brick wears longer."

Sioux City.—"With the exception of one street, asphalt pavement has proven satisfactory. Do not think it will last as long under any condition as brick. About an equal amount of brick and asphalt has been laid, but think that asphalt will lead in the future, as the greater amount of pavement will be laid in the residence district."

Pres.-Elect C. J. Holman.

Tipton.—No report.

Waterloo.—"In service as a pavement it has proven very satisfactory, especially on residence streets. Have had no streets laid until 1905 that would give a satisfactory test of the wearing qualities under heavy traffic. Public opinion not prejudiced toward any one pavement."

I feel that I cannot do better than to conclude this paper with these expressions from the men in Iowa whose technical knowledge and daily experience fits them to speak on this subject, while at the same time they have no material interests to give them a partisan bias.

President Rawson: I do not think Prof. Marston need worry about "butting in." We are always glad to hear from him. The next is a paper entitled "Drain Tile" by Mr. J. A. Wilson, of Dowes, Iowa.

DRAIN TILE.

J. A. WILSON, DOWS, IOWA.

Mr. President and Gentlemen of the Convention:

This subject, "Drain Tile," is of great and vital importance to all who are interested in the development and improvement of State and country. It is a recognized fact today that we must have some means of underground drainage to bring our soil up to its fullest state of productiveness. Therefore, the question, "How shall this be accomplished?"

We will discuss a few phases of this subject that appeal to us as being worthy of our consideration. Although it has been reserved to the present time to see land drainage reduced to a system, or at least very great improvements made in methods, based on scientific principles, it is by no means a modern discovery.

The Romans were careful to keep their arable lands dry by a means of open trenches, and there are some grounds for surmising that they even used covered drains for the same purpose. It is at least several centuries since the British husbandmen made use of covered drains or channels of various kinds for the drying of their land. It is two centuries since Captain Walter Blythe wrote on this subject and said: "Superfluous and venomous water which lyeth in the earth and much occasioneth bogginess, miriness, rushes, flagg and other filth, is indeed the chief cause of barrenness in any land of this nature. Draining is an excellent and chiefest means for their reducement; and for the depth of such drains I can not possibly bound for I have not the time nor opportunity to take in all the circumstances. And for thy draining trench, it must be so deep that it goes to the bottom of the cold spewing water that feeds the flagg and rush; yea suppose that this corruption that feeds and nourishes the flagg and rush should lie a yard or four feet deep, to the bottom of it thou must go if ever thou wouldst drain it to purpose."

By this we see that at that time Blythe understood and advocated principles of drainage that we today believe to be correct. Also, Captain Blythe had in mind the advantages, and, we may say, the necessity, of keeping the draining trenches as near to grade and in a straight line as practical.

A little more than a century ago Elkington discovered and promulgated a plan of drainage by a means of covered drains or trenches partly filled with stones, etc., which was more or less successful, and his plan was given to the public in a quarto volume by Mr. John Johnston, of Edinburgh. During the thirty or more years subsequent to the publication of this volume, most of the draining that took place was on this system, and an immense capital was expended with every varying results.

About the year 1823, the late James Smith, of Deanston, having discovered anew the principles of draining so long before advocated by Blythe, proceeded to exemplify them in his own practice and to expound them to the public in a way that speedily revolutionized the art of draining and marked an era in our agricultural progress.

Instead of persisting in fruitless attempts to drain large areas by a few extensive cuts, he insisted on the necessity of providing every field that needed draining at all with a complete system of parallel channels or drains, running with the greatest slope of the ground and the distance apart of these channels ranging from ten to forty feet. The depth which he prescribed for his parallel drains was thirty inches, and these to be filled twelve inches with stones small enough to pass through a three-inch ring—in short, a new edition of Blythe's drain. A main receiving drain was to be carried along the lowest part of the ground with sub-mains in every subordinate hollow that the ground presented.

These receiving drains were to be of sufficient size to carry the greatest amount of water at any time requiring to be carried from the area from which they supplied the outlet.

Mr. Smith appropriately named this system according to its effects, "thorough draining." The great labor and cost of these drains soon led to the substitution of tiles and soles, sometimes called horseshoe tiles, of burned earthenware. The limited supply and high price of these tiles for a time impeded the progress of the new system of drainage; but the invention of tilemaking machinery by the Marquis of Tweeddale and others removed this impediment and gave a mighty stimulus to this fundamental agricultural improvement. The substitution of the cylindrical pipes for the old horseshoe tiles has further lowered the cost and greatly increased the efficiency and permanency of drainage works.

The writer has helped to rive out timbers and construct drains from them, also from poles and stone much as described above, and we, as tile manufacturers, are all acquainted with the passing from the old horseshoe type of tiles to the octagon type and from that to our present type of drain tile. Also, we have marked the very great improvement made in the machinery for the production of all articles of earthenware—the passing from the old hand and horse-power machinery to the present up-to-date machinery now running in the extensive factories located throughout the entire country, until the manufacture of drain tile has become a very great industry.

The farmers are well up to the spirit of the times, and we believe that, as a class, they are among the best read people to be found in America. The farmer is found to be a ready buyer when convinced that advantages are sure to follow his investment. We may say, this is a sort of "show me" age, in which demonstration is the rule and not the exception. The farmer is a practical man fully appreciates his inefficiency in this matter of drainage, therefore if the tile manufacturer will explain the principles of drainage and point him to the correct method of laying the tiles, he will greatly increase his business, for it will increase the number of tiles used when a proper system is installed. Also by increasing the efficiency of the drainage you may have helped to engineer, you not only cause the farmer to reap greater benefits than ever before, but his confidence in your business is firmly established. To our mind, there is no better advertiser than a thoroughly satisfied customer, and none are blind to the necessity of good advertising. There is no better way to put the merits of a manufactured article before the public than by judicious advertising. With drain tile as with other products, advertising alone is insufficient, but needs to be backed up by experiments and tests, and there are few more practical tests than a well drained farm. There is room for improvement in all manufactured articles, and some room for improvement in drain tiles and drainage, but tile drainage as it is today has attained a very high standard of perfection. Let us note a few of the benefits to be derived from a thorough system of drainage. In swamp land this system is the only one that is safe, as it does not permit the water to run off too fast, thus giving the soil ample time to adjust itself to the absence of water, to which it has not been accustomed.

In loamy soil tile drainage has a very beneficial effect. The land is thoroughly ventilated, as loam is not so tenacious as clay, thus giving all decayable matter a chance to decay and form humus. The ventilation also keeps the ground warm and aids in keeping it sufficiently dry. On sloping ground the water from a heavy rain sinks to the tiles and is carried off as it falls, thus leaving the ground damp and warm and in proper condition to promote plant growth. If there were no tiles there, the pores of the ground would become saturated until they could take no more water, and the slope would be cut into gullies and the earth washed away from the roots of the plants, greatly hindering their growth and making the ground cold and backward, for the pores are full of water that has chilled and much of it must rise to the surface and be evaporated.

The depth to which tiles should be laid is a matter agreed upon by few. In past years drain tile was generally laid at a depth of from two to three feet, but today no one thinks of laying tile less than three to three and one-half feet, and four feet is considered the standard. It has been proved that a four-foot drain will do all that a three-foot one will do, and in most cases a great deal more. The tile drains an area below the tiles and takes the water from places that a shallower drain would have no influence upon whatever.

We do not wish to take space to mention a great many of the benefits of drain tile in time of drought, yet it will be found that the tiles will pay for themselves in a time of considerable drought, not so much by what they do as by what they prevent being done. There can be no fixed standard of cost of this system of drainage, as conditions vary so greatly. In considering the cost of a system of drainage, one should remember that it is not work that is done for a day, but for generations if properly done, hence the very great importance of having the work done very carefully and by competent men.

The United States government stations give many interesting and instructive statistics of experiments and tests along these lines of drainage, and places the increase in value of properly drained land at from 20 to 50 per cent. (Applause.)

President Rawson: Mr. Hallett has not come in yet, but I know he has a paper for us, and presume he will come in later. We have with us Mr. T. A. Randall, Secretary of the National Brick Manufacturers' Association and I know we will all be glad to hear from him. (Applause.)

National Secretary Addresses the Association.

Mr. T. A. Randall: Gentlemen of the Convention, Your president interrupted a private conversation I was holding with the Secretary. I did not hear what he said and so do not know just why I am called on at this particular juncture. Gentlemen of the Iowa Brick and Tile Association, I am very glad indeed to be with you again. It has been several years since I have had this pleasure. It has been my misfortune not to be able to attend these meetings for a number of years. The date or time of the month at which you have held your meetings of late years making it utterly impossible for me to leave my work at home or in connection with the National Association. However, I have been with you in spirit, as most of you know, so as I say, it has simply been my misfortune. I am surprised and pleased both at the large attendance and spirit of good fellowship prevailing here at this meeting. It argues well for the further growth, prosperity and welfare of the clay industries of Iowa. I hope in the future you will hold pretty close to the present date of your convention. This is a personal wish with me, for that being the case, I shall be able to meet with you, Providence permitting.

T. A. Randall, Indianapolis, Ind.

I cannot say anything that I think will be particularly edifying at this time. I would like to compliment Prof. Marston on his paper on brick pavements. I think it is a pity that the paving brick men did not discuss that paper to some extent. Prof. Marston tried so hard to be unbiased in his statements that he has leaned a little toward asphalt, I think. There are statements in that paper which are intended to be wholly fair, which are just a trifle in favor of asphalt because the details were not gone into further. It was a very able paper, and when studied carefully is a good plea for paving brick in Iowa. All things being equal, an asphalt pavement is not as good as a brick pavement at any stage of the game. (Applause). The fact that paving brick are made here locally, in your own State and your own towns, and is a home product, should of itself advance the cause and use of brick generally in preference to asphalt. As to durability, there is no comparison between them, if a brick pavement is laid according to the specifications adopted by the National Brick Manufacturers' Association, which went into the question very cerefully. A brick pavement laid according to standard specifications will outwear three asphalt pavements, and will not cost as much as asphalt in the first place. It costs no more to lay a good brick pavement than it does a poor one, and this is something that you yourselves should study and should educate the people of your several communities up to it. I wish I had heard all of your paper and had paid more attention to what I did hear after I came in. There is no question of more interest to municipalities generally than this paving question, and when you have solved it right, you will be riding over brick streets. The traction is less over brick than asphalt when the latter is soft, and when it is firm it is so slippery that horses have less foot hold, and consequently less pulling power. There are several points in Prof. Marston's paper that you will find well worth considering.

For the building brick manufacturers of the State, I have only words of cheer. You have all had a good season, evidently. The season throughout the country has been a good one. Brick throughout the country are selling for more than they have for several years. That is as it should be, for building brick as a rule have sold for less than they should. Building brick are sold too cheap. There is no material that goes into a building that is as cheap as brick. It costs more to construct a brick building sometimes, but that is because the men who lay the brick get a high price for their work, but the material itself is sold cheaper than any material used in building, and it is by far the best. Prosperity is with us; you are getting a fair price for your products, and the future looks very rosy. I hope a year hence, if all goes well, to meet you again and look into the faces of a still greater number of happy, prosperous Iowa clayworkers. (Applause).

President Rawson: I am sure we are all glad to have Mr. Randall with us, and we will have a chance to hear from him again this evening at the banquet. Mr. Hallett has come in, and we will now hear his paper. (Applause). Mr. Hallett is a local architect who has prepared a paper for us.

Mr. George E. Hallett, Des Moines, Iowa: I am sorry you started that applause so soon, you may regret it. I would like to say before I impose on you with what I have here, that I have discovered one thing in undertaking to prepare a paper for this association, and that is, that a man never appreciates how little control he has over his own time outside of his own business until he undertakes a job like this. I have had comparatively little time, and it makes it a little more difficult because I am not a literary man, but as your president has stated, an architect.

ARCHITECTURAL EFFECTS BY JUDICIOUS USE OF CLAYWARE.

Geo. E. Hallett, Des Moines, Iowa.

Mr. President and Gentlemen of the Convention:

The products of clay employed in architecture embody those coming under the head of brick, tile and terra cotta. The term terra cotta covers all of the various products save those coming more distinctly under the head of brick and tile, therefore the term terra cotta covers not only such products as exterior facings, ornamentation, etc., but a great deal that would be purely structural, such as fireproof floor arches, partitions and other fireproofing.

Probably the greatest development in the last few years, as well as the future developments and uses of clay products in the construction of buildings, will be found under this general head of terra cotta.

The wonderful development in the last few years of clay products, their popularity and extensive use in building construction throughout this country, is due to the demand for the more permanent and fireproof construction in buildings.

The successful introduction of this material in architecture dates from about the year 1880. The lack of progress and development prior to this date was largely due to the improper uses of these materials, as, for example, the definition of brick as given by the Encyclopedia Britannica, "Brick—A kind of imitation stone made of baked clay."

This would indicate that stone from time immemorial had been looked upon as the ideal building material, and any material proposed as a substitute was considered as necessarily an imitation, and therefore inferior. This idea gains further credit from the fact that the products of clay have always been cheaper than stone.

While to its cheapness can no doubt be attributed its ultimate successful introduction and later development, yet the mere fact of its being cheaper, operated against its proper uses, which was almost wholly responsible for the failure to successfully introduce it at an earlier period.

Terra cotta is probably the most enduring of all building materials, but, like brick, it was for many years looked upon as an imitation of stone, and this was carried to the extreme of painting the terra cotta to correspond to the color of the stone it was desired to imitate.

While terra cotta has been used extensively in building construction in foreign countries for centuries, it is only within the last few years, comparatively, that it has come into general use in this country.

The abundance of timber and the comparative ease with which it could be converted into building material made it most available for the early buildings. Later came the use of brick with wood trimmings and ornament. then brick with stone trimmings, and stone buildings.

When we consider that buildings were even constructed of wood, designed to imitate stone and wood trimmings in imitation stone were applied to brick buildings, brick walls were plastered and marked off in imitation of stone courses and painted to imitate the color and effect of stone, it does not seem so strange that architects felt the necessity of painting terra cotta to imitate stone.

These ideas and practices prevailed in this country up to about 1880. About this date Mr. Geo. B. Post is said to have been the first architect to introduce the use of terra cotta in architecture as terra cotta, rather than an imitation of stone. He seems to have been the first to recognize the importance of adapting his design to the materials, which is now generally regarded as quite as important as the design itself.

The color adopted was red, which was no doubt the safest color to undertake at that time, if, in fact, other satisfactory colors might have been available at all. The particular shade of red used in this work was a light, warm red, which has become universally known as terra cotta color. This, therefore, marks the beginning of the proper use of terra cotta in this country.

While many earlier attempts were made to introduce it as a building material, the inability of the architects to separate it from stone and make their designs conform to the new material contributed largely to these failures to establish it in its proper place as a building material, divorcing it from stone and placing it on its own merit, made its wonderful development during the last twenty-five years possible. On the other hand, terra cotta has contributed a great deal in the development of architecture during this period, as, for example, the modern skyscraper must, of necessity, be of steel frame construction and no material lends itself to this type of construction as does terra cotta.

The frame work of these buildings, carrying the walls or outer covering of each story independent of the stories below, makes great strength unnecessary, and, therefore, makes it possible to reduce the weight of the walls to the minimum. The development in the manufacture of terra cotta makes it possible to meet most any condition and requirement of construction, as well as design, and the great variety of colors and texture of surfaces to be had meet all requirements of taste.

E. R. Frazier, Chicago, Ill.

The time is not far distant when all buildings of any importance, and that make any pretense of permanency, will be built of fireproof construction, terra cotta will be largely used in the exterior walls, and in interior construction in the shape of porous terra cotta.

I believe we will see burned clay similar to this porous terra cotta, made in a convenient form to be used as the aggregate for concrete, in the place of crushed stone and coal cinders, now in use, in concrete floor and other construction. It would combine all of the advantages of both and be subject to none of the objections of either cinders or broken stone, and would make cheaper construction than the terra cotta arches now in use.

While terra cotta has been placed upon a proper basis and will enter very largely into the architectural composition of the future building, as well as in the fireproof construction, it is not due to the fact of its cheapness, but on account of its adaptability to modern architecture and building construction.

It must not be expected, however, that clay products will take the place of all other materials, as while better effects can be had by the use of terra cotta in certain cases, it will also be found that certain other effects can best be obtained by the use of stone, and as this fact becomes better appreciated and understood, its abuses will be decreased and its proper value as a building material more permanently established.

Color.—The colors of the earlier products of burned clay in this as well as other countries were necessarily fixed and limited by the character of the natural clays, which, in this country, were almost entirely confined to the reds. This fact became so thoroughly fixed in the minds of the people that the suggestion of brick conveyed to the mind the one color—red—save the one exception of the Milwaukee brick, and this exception is made most notable from the fact that in later years, when other colors were developed, they were compared to the Milwaukee brick, while brick made in China and Japan are invariably slate-blue in color.

The later developments in color of brick runs parallel with that of terra cotta; practically no attempt was made to vary or control the colors until after 1880, as about this date terra cotta was started on its successful development in the one color of red, but the application of science and higher education has produced all colors and shades required, together with surfaces, textures and effects to meet all demands.

These same conditions prevailed in the manufacture of tile, if not to even a greater degree, as the earlier types of floor and other tile have been practically abandoned.

It is now not unusual to see in a house even of moderate cost a bath room entirely lined with tile, white vitreous for the floor, with glazed white or tints, with embossed enrichments in delicate and beautiful designs, for the side walls and ceilings, casings of doors, windows, etc., with bath room fixtures almost entirely of burned clay, solid porcelain tub, one piece lavatory, closet bowl and even the closet tank of porcelain or vitreous china, eliminating the use of wood in bath rooms almost entirely.

The development of American porcelain in bath tubs and lavatories in the last few years has been most interesting and gratifying when it is considered that these products are now being produced in this country, of superior quality, and at the same time at a very much lower price than the imported wares.

The manufacture of roof tile has also developed most extensively, and are now to be had in various colors of excellent quality of material and in forms that produce pleasing architectural effects, together with the most durable and satisfactory roof coverings to be had.

The original size of the English brick is 4½x9x3 inches. The Roman brick 4½x12x2 inches. These sizes have been modified for various reasons, until we have brick of most all sizes and shapes imaginable, which is a great nuisance from an architect's standpoint. as no building of any architectural pretense can be properly designed without figuring dimensions which will be affected by a variation in size of the brick from the size used as a basis, and as it is often impossible to determine the exact brick to be used in a given building, in advance of preparing the plans, and sometimes it is necessary to change to another, even after the plans have been figured to conform to a particular brick, as there are hardly any two brick manufacturers in the country whose brick are of the same size, it makes an endless amount of work and trouble for the architect, and not infrequently the results are disappointing, with all the care possible short of actually preparing entire new plans.

Perfect uniformity of size would be of substantial value to all concerned. The exact size would not be of so much importance so long as the proper proportion of width to length was maintained, which should be, length equal to twice the width, plus one joint. Many brick are made the length equaling only twice the width, not allowing for the joint; again, where the length exceeds twice the width and a joint, in the one case leaving practically no joint, and in the other a very large joint. Satisfactory results cannot be obtained with such sizes.

As to sizes of products other than brick, no definite or standard size can be fixed, as this would naturally run into terra cotta and will in the very large majority of cases require special sizes.

The hollow blocks which have been made quite generally in this section of the country in the last few years can be used to advantage under certain conditions only. There are objections to them, which will limit their use, as, for example, their size makes it impossible to work even courses to given heights as well as lengths of wall, therefore requires the use of more or less brick in connection with them. This often makes their use ill advised, as the only possible advantage over a wall entirely of brick is the saving affected by their use.

Where a large portion of brick is necessary to carry up jambs, reach proper height, etc., the saving is reduced to the minimum, if, in fact, a saving is affected at all.

Further objections are in the difficulty to keep the mortar from falling out of the head joints, owing to the thin shell. It is very difficult to apply the finish in buildings where they are used, as the size of the blocks place the joints so far apart it is often impossible to provide nailing at proper points, so that we naturally come back to the ordinary brick size as being the most desirable for backing up walls, as well as for facing.

The units can hardly be larger than the standard brick size, especially in thickness, without encountering difficulties or providing special sizes, as it is absolutely necessary to govern the different heights to meet the requirements. With brick this is done by a variation in the mortar joints, with a brick two and one-fourth inches in thickness the greatest variation possible would be one-half the thickness of a brick, or one and one-eighth inch to be gained or lost, to come to the proper height of sill, top of openings, etc. While to double the size of the unit, making it four and one-half inches instead of two and one-fourth inches, we decrease the number of joints by half and increase the possible variation to overcome by the same proportion, or to a possible two and one-fourth inches to be taken care of in half the number of joints, which would result in a great many cases in leaving no joints at all or in making very large and unsightly joints, if indeed it were possible to conform to the given height at all.

The introduction of the cement block has created a disturbance in the minds of the brick manufacturers to some extent. This need give little or no alarm, as the cement block, especially in its present form, is of short life.

The size prohibits its use in everything except the most ordinary class of work for the reasons just given. It is impossible to build a building of such large units, unless the building is planned with a view of making all of the openings, heights, etc., to conform exactly to these sizes, as the requirements of modern architecture will not permit a building to be planned and designed in this way. It would require special blocks of many different shapes and sizes for each individual building. This would necessarily increase the cost of the cement blocks to a prohibitive point, as they have nothing to recommend them save their cheapness, compared with other materials.

What is most needed in this section of the country is a cheap, rough brick. The brick industry has been well developed along the lines of paving brick, which can be used in the construction of buildings to advantage only under certain conditions. The development of face brick has quite kept pace with the demand, but little or no attempt has been made to supply the great demand for a cheaper brick for filling in and backing up the walls, which constitutes a large portion of the walls of most buildings.

I believe that most every one in the building business felt at the time of the introduction of the paving or shale brick that the acme of perfection had been reached in the manufacture of common, rough brick for building purposes, but experience of the last ten years has shown conclusively that this quality of brick can only be used to advantage in certain portions of a building. In foundations, piers and bearings where loads are concentrated, these brick fill every requirement, but for the general use of filling and backing up walls they have many objections.

In the first place they are much better and more expensive than necessary, which means a waste in the construction of buildings, as their extra quality adds nothing to the value of the building. Again, they are in many ways a positive disadvantage, it being impossible to place the finish without plugging the walls and their vitreous character, which makes them so valuable for many purposes, is a positive disadvantage when used for filling and backing up of walls, as it greatly retards the drying out of the mortar and consequently of the plaster, and eventually the drying out and preparing the building to receive the interior finishings.

They are not a desirable brick for the construction of chimneys, bricking in boilers, etc., as they are so dense they expand and contract to the extreme, and are also great conductors of heat and cold. This same objection applies in the backing up of buildings to a certain extent, added to these objections is the one of their extreme weight, which requires more expensive foundations and footings.

The brick so generally used in and around Chicago I have come to consider about the ideal rough brick. A few years ago these brick were used for filling and backing the walls of a building in this city, and at the same time we had charge of several other buildings in which the shale brick had been used. The Chicago brick were used in the one building purely on account of cheapness, but their advantages in point of weight, facilitating the drying out of the building, putting up finish, etc., left no question in my mind as to their desirability. It seems with all of the varieties and grades of clay to be found in this section of the country, we must have a clay or combination of clays that would produce a similar brick, and we know of nothing that would contribute more to the building up of our cities than the advantages of this grade of material, and believe that with proper clay and other conditions would afford a profitable and desirable enterprise from a manufacturer's standpoint, as it would be an enterprise of practically one commodity.

The possibility of discovering just the proper clay to produce this grade of material calls to mind a trip to the American Terra Cotta Works, located near Chicago, in about 1894 or 1895. My attention was called to the work of a young man recently graduated from the Ohio State University from the ceramic department.

Charles Burridge, Tecumseh, Mich.

Mr. Gates, president of the company, informed me that this young man was one of three of the first class to be graduated from this department. Knowing of this special course in the university, he had engaged one of the graduates before he finished his studies, built a laboratory at the works, and as soon as he was out of school set him to work. At the time of my visit he had been at work only a comparatively short time, but had accomplished a great deal in taking care of shrinkage, tendency to warp, check and other difficulties encountered in burning, also in producing colors and textural effects never before produced in this country.

Mr. Gates was very enthusiastic over his work, and speaking of this branch of higher education, expressed himself as of the opinion that it was a calling that should attract many young men.

I had forgotten the university and thinking perhaps this would be of interest to the clayworkers of Iowa, I wrote Mr. Gates for the name and address of the professor in charge of this branch of the university. In his reply he states, "It is the ceramic department of the Ohio State University, of Columbus, Ohio, in charge of Prof. Edward Orton, Jr., whom I consider to be quite a wonderful man. Have sent four of my boys to him and only stopped then because I had no more boys."

This, I believe, shows conclusively that what is most needed in the clay industries is greater knowledge and higher education along scientific lines, as I believe there can be no question that the products of clay will enter very largely into the construction of our future buildings. We must look for great developments in these products in the next few years, and I do not know of any profession or business that can be taken up by a young man with such prospects for financial success, to say nothing of the possibilities of great accomplishments.

Mr. Gates testifies to his confidence along these lines, when he sends his four sons to take up the same course. This action on his part confirms the idea that he is not only satisfied with the terra cotta business at this time, but he sees in its future development room for his four sons, and more if he had them. I believe many of those engaged in the manufacture of clay products in Iowa could well give this suggestion careful consideration, coming, as I believe it does, from one of the most successful men engaged in the manufacture of clay products in America. (Applause.)

President Rawson: I think Mr. Hallett has given us a number of ideas to think over. There is a local photographer outside who is very anxious to take a photograph of the convention, and I told him I would ask you as to your pleasure.

Mr. Randall: As we have finished the programme, I move that, in the interest of art, we comply with the photographer's request.

Motion seconded and carried.

President Rawson: The club where the banquet will be held is directly across the street from this building, and we hope you will all be with us at 7:30 o'clock this evening. We now stand adjourned until 9:00 o'clock tomorrow morning.

Third Session.

Thursday Morning, January 11, 1906.

President Rawson: Gentlemen, it is time for us to get to work, and you will please come to order. The first paper on the programme is a paper by Prof. D. A. Kent, of Jewell, Iowa, on drainage laws. I think we will all agree that Prof. Kent has done more for the drainage law than any other main in Iowa.

DRAINAGE LAWS.

By D. A. Kent, of Jewell, Iowa.

Mr. President and Gentlemen of the Convention:

The evolution of the drainage laws has taken place chiefly through the experience of the owners of the wet lands of Ohio, Indiana, Illinois, and Iowa. The Iowa law is the last enactment on the subject. In the formulation of the Iowa law it was attempted to summarize the laws of the other States, and adopt their best principles. This, we think, has been fairly well done, with some exceptions that will be noted in the body of this paper.

I am pleased to note the interest that this convention has always taken in the matter of drainage laws. You are to be complimented for being alive to your best interests. The manufacture of drain tile has formed a large part of your industry, and it will continue to do so for a long time. You tilemakers will have to manufacture something like $50,000,000 worth of tile before the drainage of our State is well done. We have about 6,000,000 acres of land to drain, and it will require fully $50,000,000 worth of tile to finish the work.

I apprehend that at this time you desire a discussion of the practical operation of the new drainage law.

The chapter of the drainage laws that was enacted at the session of the last General Assembly provides only for drainage through the organization of a drainage district, and for private drainage on the farmer's own land when he terminates his drain within the boundaries of his own land and in the natural waterway. This new statute provides two methods of procedure: First, by petition of one or more interested land owners; and, second, by the mutual agreement of all the interested parties. This latter method is highly commendable, and much to be preferred. It does away with a large part of the expense in the preliminary proceedings, and avoids the contention, strife, litigation and delay that almost uniformly follows the first method.

To proceed under the second method requires reasonable men, and men who know enough of the subject of drainage to determine what is right, and then, knowing the right, be willing to do it.

Under this method the expenses of appraisers for both benefits and damages are avoided. Also the expense of serving notices, calling witnesses, spreading the tax and attending the various meetings of the board of supervisors. And, we may well add, the vast expense of bad blood and neighborhood quareling. A ditch, by mutual agreement, becomes corporate property as soon as all the articles pertaining thereto are properly expressed in writing, duly signed, acknowledged and filed with the county auditor. The board of supervisors will then take jurisdiction of the ditch, construct it and maintain it.

A ditch by petition requires more elaborate work, and entails expense, and this method should be pursued only when there are certain interested parties who are not willing to do what is right between man and man. In the institution of a drainage proceeding by petition, there are but few questions to be decided, chief among which are the questions, Is the drainage practicable? Who are benefited and to what extent? Who are damaged and to what extent? The utility of a ditch is practically established by the statute, and whenever a board of supervisors have been properly petitioned it is their duty to proceed with the preliminaries leading to the establishment and construction of the ditch or drainage improvement. The questions for review by the courts are the form and matter of the petition; the regularity of the proceedings; the equity in the assessments of benefits; the justice in the awards for damages; the competency of the board of supervisors and its commissioners of appraisement, and the action of the board in its findings for or against the petitioners. These questions give broad grounds for appeal and preclude the possibility of any man being robbed of his rights if he attends to his business in the initial proceedings. The grounds for appeal are so specifically pointed out that no one needs to be at a loss to know his rights in any particular.

The drainage laws provide for the drainage of an individual farm through the organization of a sub-district when the farm lies within a drainage district. But there is no law permitting a private land owner to drain through the land of another without his consent. There is a constitutional amendment pending which has for its object the preparation of the way for laws that will properly provide for such cases. Hitherto the doctrine of personal liberty has been strangely applied in the matter of inter-farm drainage. It sounds very great to trumpet the principle that a man is lord of his own castle, and master of his own frog ponds, but personal rights cease where civil rights begin. Blackstone defined these rights most comprehensively when he denominated a natural as a savage right, in distinguishment from civil rights. There is no essential difference between the corporate bodies of a city or town and a civil township, and if a man owns a lot in town, the town council has no hesitancy in going straight after a tax for the purpose of constructing a drain or sewer or pavement that will improve the lot owner's property or the town property in general; but if the township trustee undertakes to tax a lot in the country for the construction of a drain, the act is at once declared unconstitutional, the improvement is stopped and the lot owner looks with imperious derision on his enterprising neighbor.

Moreover, the statute empowers the trustees to compel the joint owners of the boundary line between farms to construct partition fences jointly, and pay for the same share and share alike. But the statute is hushed when the trustees come to the question of compelling joint action in the construction of a ditch along a waterway that is owned in common by two land owners. The courts draw the line between a post hole and a tile hole.

Section 44 of the new law should be amended so as to compel a tax according to benefits on all lands benefited by a ditch draining the highway. The present form of this section provides the way for the man with a pull to get his land drained at the expense of the township.

Section 40 delegates the power to the board of supervisors to buy an outlet for a ditch leading into an adjoining state. This section is lame in that it does not confer power upon the board of an adjacent county in another state in the same manner as the provisions for a ditch in two or more counties. Sections 18 and 19 pertain to crossing the right of way of railways. These sections read very nicely until we come to the provision where the cost of construction of the improvement over the right of way shall be considered as an element of damage. This iniquitous provision should be stricken out. The railways of the State receive as much benefit from the drainage of the wet lands as the land owners, and they should be able to see their interest and not be a thorn in the side of every drainage proposition that comes up.

Under the liberality of the present law they should show their good will by being content with reimbursement for the actual cost of making the improvement over their right of way; but, instead, they file claims for damages in some instances that would blush the face of a New York grafter.

Under Chapter 2, Title X, of the Code, there are two methods of procedure: First, by petition signed by a majority of the abutting land owners, and, second, by a petition signed by a hundred free holders in the county. The first form of petition is objectionable, in that it may exclude interested parties who are not abutting land owners, and in that it lodges too much of the preliminary proceedings with the county auditor. The second method is decidedly objectionable, in that it qualifies men who have absolutely no interest in the improvement to sign the petition. They sign the petition therefore because they dislike to say no to the petitioner, and then probably turn around and sign a remonstrance because they have the same dislike to say no to the remonstrator. The old law is practically a dead letter in the light of the new law. The question of determining benefits requires more good business sense than the administration of all the rest of the law. One section lays down a guide which, if intelligently followed, will lead to an equation of interest with mathematical precison. The basis for determining benefits lies in parceling out the land that receives the most benefits. These parcels should be marked 100. Then every other parcel of land in the district will be benefited a certain per cent. of 100. This per cent. must be determined from two standpoints: First, the amount of wet land each parcel contains, and, second, whether the benefit is direct or indirect. A direct benefit follows in all cases where the main ditch affords an immediate outlet for lateral drains, an indirect benefit obtained wherever it is necessary to organize a subdistrict to afford drainage for the lands in question, and in this case the amount of benefit lies in the relation of the sub-main to the main drain. That is, if the submain discharges one-tenth as much water as the main, then the land drained by the sub-main should be assessed one-tenth of the cost of the main drain from the junction to the terminus, and this assessment should be apportioned in the same manner as prescribed for the main ditch. To make the matter more plain, we will assume a drainage problem and give the solution. We will assume that we have organized a basin comprising 5,000 acres into a drainage district, and that the cost of the construction of the main ditch will be $25,000. We will assume that there is a railway running through the district, and that the benefits to the railway are $1,000. We will also assume that the highways of the district are benefited in the sum of $2,000. This leaves $22,000 to be levied on the lands of the district in proportion to the benefits. Now we will suppose Smith, Jones, Brown and Williams each have 120 acres of land that is benefited more than the rest of the land. Their classification number, therefore, will be 100. Then Oleson, Peterson, Larson and Swanson each have 160 acres that is benefited only three-fourths as much; then their classification number will be 75. Then Frederickson, Koof, Arens and Fritz each have 400 acres which is benefited only one-half as much as the highest classification number. Their number will be 50. Then there are McDonald, O'Connell, Flannigan and Muldoon whose classification number should be only 25, and they each have 240 acres. Then there are Johnson, Thompson, Anderson and Christianson who each have eighty acres and whose classification number should be 10. Then there is Crawford who has 120 acres away up in one corner of the district, which is not much benefited, and his classification should be 5. Now multiply each owner's acreage by his classification number and this product will be so many acres at 1 per cent.

Find the sum of all the products and divide the amount to be raised on the land by this sum. The quotient will represent the amount on one acre classified at 1 per cent. Then multiply each owner's product by this quotient, and the resulting product will be his correct assessment. The following table illustrated the solution of the problem:

Total cost of ditch............		$25,000.00
Am't assessed against highway	$2,000.00	
Am't assessed against railway	1,000.00	
	$3,000.00	3,000.00
Balance to be assessed against land		$22,000.00

Names of Owner.	No. Acres.	Classification Number.	Product.	Assess. on 1 Acre.	Each Owner's Assessm't.
Smith	320	100	32,000	.07741	$2,477.12
Jones	320	100	32,000	.....	2,477.12
Brown	320	100	32,000	.....	2,477.12
Williams	320	100	32,000	.....	2,477.12
Oleson	160	75	12,000	.....	928.92
Peterson	160	75	12,000	.....	928.92
Larson	160	75	12,000	.....	928.92
Swanson	160	75	12,000	.....	928.92
Frederickson	400	50	20,000	.....	1,584.20
Koof	400	50	20,000	.....	1,584.20
Arens	400	50	20,000	.....	1,584.20
Fritz	400	50	20,000	.....	1,584.20
McDonald	240	25	6,000	.....	464.46
O'Connell	240	25	6,000	.....	464.46
Flannigan	240	25	6,000	.....	464.46
Muldoon	240	25	6,000	.....	464.46
Johnson	80	10	800	.....	61.92
Thompson	80	10	800	.....	61.92
Anderson	80	10	800	.....	61.92
Christianson	80	10	800	.....	61.92
Crawford	200	5	1,000	.....	77.41
					$21,999.79

The elements of damage consist of the area of the right of way for the ditch. The number of bridges required for crossing and any injuries to crops that may result during the construction of the ditch. In the nature of things, no general claim for damages should be allowed, because the waterway existed before the ditch was constructed and the ditch is assumed to be an improvement of the old waterway, instead of a damage to it. The only reasonable exception that can be taken to this position is the instance wherein it is necessary to condemn land uninjured by the old waterway for an outlet for the new waterway. I am of the opinion that the right of way for the new ditch is not a righteous element of damage. The land through which the old waterway meandered is always comparatively valueless, and the new waterway is made to improve it. It is therefore absurd to claim that it is both damaged and improved by the same act.

The matter of fencing the ditch should be controlled by the board of supervisors, and should not be considered as an element of damages. They should determine what fencing is necessary for the protection of the ditch, and, inasmuch as all ditches will not need fencing, and in some instances only the deep sections, the fencing should be a part of the original cost of the improvement. (Applause.)

Discussion.

President Rawson: I think this drainage problem is one of the big problems for the clay people. If anyone has any questions to ask I am sure Prof. Kent would be glad to answer them.

C. J. Holman: I feel that this association is under obligations to Mr. Kent for the able paper he has given us, and I move we extend him a rising vote of thanks.

J. B. McHose: Second the motion.

President Rawson: I think, as I said before, that Prof. Kent has done more toward getting this drainage law through than any other man in the State. All in favor of a rising vote of thanks will please rise.

The convention rose unanimously.

Prof. Kent: Mr. President, gold, you know, cannot buy the good will of our fellow men.

J. B. McHose, Boone: I wish to add a word in favor of the exposition of this law, as made by Prof. Kent. He has told us the facts of the drainage law. I think we can all go home understanding that law much better than we could have done by reading it in cold print. I think this association has done much for this drainage law, and I think we can feel proud of what we have accomplished. This law benefits not certain portions of the State, but the whole State. It pertains to the larger areas of land, as the Professor has stated. We are still confronted with the great problem, if not the greater problem now, that of the smaller area, where one neighbor seeks an outlet upon his neighbor's land. We are still as far away from that part of the drainage law as we ever were. The Professor has started some things in this matter. The Courts had not advanced very far in drainage when they made a decision more than twenty years ago. The Courts of this State held that the rights of the lower man was so supreme that the water was not allowed to run down hill through the tile before it went over the natural surface of the ground. That decision was made by the majority of the Courts though when drainage was almost unknown in the State of Iowa, and we feel that there is a possibility to-day of that Court reversing itself, if the matter was fairly presented to the Court in the light of the drainage laws and the drainage sentiment of the State to-day. If I had occasion I should carry it to the Supreme Court with the idea that they would have advanced in civilization up to this time. I feel sure we will be able to meet the situation. I want to extend my personal thanks to Mr. Kent for the able manner in which he has presented the drainage laws of this State. I hope to have some improvement even on the present law. Prof. Kent refers to damage and assessment. There is a weakness in the law. The Professor indicated that we wanted the best men, but we cannot get the best men under the present salary. You ought to have fair and unprejudiced appraisers, and you will have to pay for them if you get good men. It is a weakness of the law that the salary is not adequate. Some one has said the engineer should be competent and it is a good suggestion. There are some weaknesses in this law which I hope time will eliminate. We cannot expect to get everything at the first jump. We will accept the law with many thanks, and hope it will be improved. (Applause).

J. A. Wilson, Dowes: In case there would be a piece of land that had sufficient outlet, and the land had been tiled, and it was in a drainage district, how would this assessment be made?

Prof. Kent: He would not naturally be in the district if he had an outlet in some other direction. The water itself defines boundary. If a man had a forty acre farm in two basins, so that one-half lay in one basin and the other half in the other basin; now only that portion of the land lying in the basin to be drained could be counted in the drainage district, and it should be assessed only to the extent it was benefited. The benefit would be very small and most generally is. When you get way out to the outer edge of the basin, you are getting out to the land well drained, and every man is entitled to the natural easement of his land. You should give a man the full benefit of the easement, the natural outlet. If the land is naturally drained, he is not supposed to pay for any benefits of the construction of the ditch except in the way of general benefits. A man may have 640 acres in a drainage district, every acre of which is perfectly drained. Should he be assessed? Some say he should, for the reason that the draining of the land around his land will raise the value of his land, and so he should pay for the benefits. The Courts are inclined to hold that that man should pay a certain proportion of the cost of the improvement, as he shares in the general benefit.

L. E. Rodgers, Chicago, Ill.

Mr. McHose: It would be well for us to bear in mind that the Courts have decided several individual cases in connection with this drainage law as have been brought before them. The Courts cannot decide that the whole drainage law is constitutional, because it has not been brought to it as a whole, and we must not delude ourselves that it has.

President Rawson: They have had several cases covering most of the important points, have they not, Prof. Kent?

Prof. Kent: Only a few of the points have not been specifically decided. The sub-district, and the little drainage law, providing for the drainage of a man's own land as the particular questions that have not been decided. One is the question of a sub-district within a drainage district, although we feel that when these questions come up for decision, there is no question but that they will be sustained, although there is a possibility that they will not be. However, I think they will.

President Rawson: The next number on the programme is a paper on "Waste Heat" by Mr. L. E. Rodgers, of Chicago. He is looked upon as an authority on waste heat matters. (Applause).

WASTE HEAT.

By L. E. Rodgers, Chicago, Ill.

Mr. President and Gentlemen of the Convention:

The dryer is, and always will be, one of the most important factors in the manufacture of clay products.

However careful you may be in selecting your material, careful in reducing it to the proper degree of fineness, careful in the pugging and careful in the manufacture, if your dryer is not right your labor has been in vain, for if the product is not dried uniformly in the dryer and a proportion of perfectly dried brick and a proportion of unequally dried brick, containing an undue excess of moisture, be placed in a kiln together, the result will be apparent in the difficulty of maintaining even firing and in the lack of uniformity of the burnt product.

Every ounce of surplus moisture in the product that must be removed in the kiln increases the cost and time of burning.

You do not have to travel far from any point in this country to find plants where large quantities of material have been cast aside on account of checking, and others where the product is being set only partially dried, due to the fact that the dryer will not dry the product uniformly or rapidly. Demand for material will not permit of delay, so the drying is finished in the kiln, but every brickmaker knows that if he can put his material into the kiln thoroughly dry his product will be the better for it.

The time will never come when all dryers will be uniform, for, while the principles involved will be the same, each plant must be given individual treatment to secure the best results, all points being carefully considered and the dryer designed accordingly.

The ideal dryer must embody the two fundamental principles of drying—heat and circulation; and, whether the method be steam, furnace or waste heat, these principles will be involved.

The method of utilizing the waste heat being different in detail in most every case, the principles only can be advanced in this article.

This is an age of the utilization of by-products in all branches of industry, and constantly increasing competition in all lines of trade makes it imperative to the brickmaker, as well as other manufacturers, that the cost of production be reduced to the minimum, and it has been stated by those who have given the matter considerable study that the by-products of any industry have been found to be the principal source of business profits.

Waste heat from cooling kilns is a by-product which has received little or no attention by the clayworker until recent years, and yet experiments conducted since its first successful utilization have amply demonstrated that the losses sustained by its non-use have been enormous.

Waste heat is now being utilized successfully from both down-draft and up-draft kilns, for either drying or water-smoking, and has proved to be the brickmaker's greatest source of business profit. The utilization of waste heat from up-draft kilns was until recently not considered feasible, but there are several plants now successfully operating up-draft waste-heat systems.

It should require no more argument to convince the brickmaker of the economy of waste heat than to convince him that conventions are necessary and mutually beneficial, or than to convince the farmers of Iowa that drain tile is a profitable investment.

Waste heat can be controlled as efficiently as any other form of heat used for the drying of clay products, and, no matter how tender the clay if expert consideration of local conditions is obtained all checking troubles can be successfully avoided; also, by the use of proper temperature-recording instruments, absolute uniformity of heat, and circulation are available throughout the dryer.

If you are doubtful as to whether or not the utilization of the heat you are now wasting would add materially to your income, talk it over with some of the pioneers who, having the courage of their convictions, installed waste-heat dryers and are now enjoying the resulting dividends.

Your program states that this afternoon will be devoted to the inspection of the clayworking plants of Des Moines, and, as the Flint Brick and Coal Company has recently started up its new waste-heat dryer, it will probably be more profitable and interesting to discuss the details of the waste-heat system of drying on the ground, where any points that are not clear to the clayworker will be gladly explained. (Applause.)

President Rawson: I think probably we had better ask Mr. Rodgers questions here than out at the plant. If he don't answer all our questions at the plant this afternoon, we will fix him. The next number on the programme is a paper by Mr. Will Brecht, of Des Moines, Iowa, on "Paving Brick and Pavements." (Applause).

PAVING BRICK AND PAVEMENTS.

By W. H. Brecht, Des Moines, Iowa.

Mr. President and Gentlemen of the Convention:

Many papers have been written and read on this subject, "Paving Brick and Pavements," by men whose experience and study extend over a long period of years, and when our genial president asked me to present a paper at this convention I objected on the ground that these various papers—and I take it that most of you have either heard or read them—so thoroughly covered the subject that I had nothing of advantage or interest to say. With a few suggestions, however, I promised to make the venture. I first want to ask your indulgence, for I may, unfortunately, show inexperience or ignorance in the handling of the subject as well as in the attempt to pose as a literary light instead of an ordinary brickmaker.

Through the National Brick Manufacturers Association, and more especially through the efforts of the individual manufacturers, the standard of paving brick is nearly all that can be desired. I know from a limited experience, however, that the making of paving brick is a difficult matter, requiring not only the proper raw materials and the proper methods and processes of mixing and burning, but a scientific and practical knowledge of the business in general. The first paving brick laid in this city were necessarily rather poor in quality, but the product has steadily improved until now it can safely be said that our Des Moines paving-brick manufacturers produce a brick equal in quality to any produced in this country. It is true, and it must be conceded, that the manufacture of paving brick has reached a higher degree of perfection and is conducted with greater skill than any other part connected with the construction of a brick pavement. Brick, as a paving material, has received some criticisms because of the inferior quality of the material that has sometimes been sent out by the manufacturers, and there will always be need to exercise care in selecting brick of uniform quality, but I believe that the manufacturers are awake to the situation and that this need will grow less year after year.

Des Moines' first brick pavements were laid, I believe, in 1889, sixteen years ago, and since that time many miles of brick have been laid, the large majority, however, in the early '90's.

These first brick pavements were laid on a foundation consisting of a layer of gravel or sand, and a course of brick laid flatwise. During later years it has consisted of six inches of Portland-cement concrete, and this has been adopted as the necessary foundation. That brick as a paving material has proven successful in Des Moines goes without saying, but it is true that many of the streets, more especially those first paved, are now very much in need of repaving. So far only two of our streets originally paved with brick have been repaved. One of these, West Grand avenue, which is our most prominent and beautiful residence street, was paved during the year 1891 for a distance of fourteen blocks with an inferior quality of hard-burned brick. The foundation consisted of a layer of sand and a course of brick laid flatwise. Unfortunately this pavement was opened, from one end to the other, for various purposes, such as telephone conduits, water and gas mains, as well as smaller openings for making extensions from the street to private property. The amount spent for repairs on this pavement was practically nothing, and as a result it maintained itself for a period of only a trifle less than thirteen years. It was replaced with sheet asphalt on a five-inch concrete foundation during the summer of 1904.

Walnut street, which is our main business thoroughfare, was paved from the Des Moines river to West Twelfth street during the year 1882 with cedar blocks on a sand foundation and replaced during the summer of 1893 with brick on a six-inch concrete foundation. These brick to-day, right from the kiln, would not be classed as a standard paving brick; they would not compare favorably in any respect with the material now being produced, and it is true that under the heavy traffic they wore off to a considerable extent. This wear, however, was slight compared to the damage as a result of the constant opening of the pavement. I will venture to say that this pavement, twelve blocks in length, was opened in no less than five hundred places, in addition to being opened the full length for the purpose of laying electric-light and telephone conduits. You will not feel that this is an exaggerated statement when I say that the ordinance now in force, which requires that before making an opening a permit must be secured from the Board of Public Works, has not been strictly enforced, and any citizen, corporation or contractor has been permitted, upon any sort of pretext, to make an opening in a pavement without notifying either the Board of Public Works or city engineer. The replacing of the pavement cut out was in most cases done in a slipshod manner, and the result was that the pavement soon became rough, and the cry was "Repave the street." It was repaved during the summer of 1905 with sheet asphalt, an additional three inches of cement concrete being placed upon the old foundation to bring the street to grade. While brick was not chosen as the best material with which to repave this street, it is gratifying to the brick interests of Des Moines to know that, with the continued abuse and neglect from the time the brick were first laid in 1893—and it must not be forgotten that these brick were inferior in quality to those now being produced—the pavement maintained itself for a period of twelve years. It remains to be seen whether or not the new pavement will do as well.

Vice-Pres. Elect W. H. Brecht.

In the management of municipal affairs no one item of expense aggregates more than that of improving and keeping the streets in repair. It is always up for consideration. Cities of medium size are, as a rule, not extremely wealthy. They have no extra money to spend. Your convention city has had some experience along this line and, I believe, is up against a proposition at this time. It appears that the fund set aside last spring for street cleaning purposes is almost exhausted, and, with the larger part of the winter before them, there is considerable speculation as to what the appearance of the streets will be in two or three months or when the next appropriation is made. This condition prevails not only in Des Moines, and is cited to show that the writer believes that the strictest economy must be practiced in the management of municipal affairs as well as in the management of any business concern.

Brick's only real competitor in Iowa is asphalt, and when a street is to be paved as a general rule petitions are circulated among the property holders by the advocates of both materials.

In a paper on paving, read before this association by Mr. John B. McGorrisk, of this city, at the 1903 convention, the methods employed by the competitors in promoting paving and circulating petitions were fully and, I believe, correctly explained. If the same methods were and could be employed by the advocates of brick, I firmly believe that the minority petitions would be much less. When a petition is presented to a council, whether it be a majority or minority petition, it should first consider carefully the material best adapted for economy and general utility. It must select a material of sufficient strength and durability for the local needs and take careful thought of the first cost as well as the cost of cleaning, and especially the item of repairing, which, after the guarantee period expires, falls upon the city. Inasmuch as petitions are not generally circulated by the property holders, but by an agent in the employ of some paving concern, for the benefit of that concern, I do not believe in letting the people alone make the selection. Officials are chosen because of their fitness to properly administer the affairs of a city, and I do not believe that the general public is as capable of judging the economy of an improvement as are these officials, who devote their time and study to these matters. This would, however, be not only a poor, but a vicious, policy in cities where the officials forget that their positions are not to be used for private gain, as is sometimes the case.

As to the first cost of the two pavements, it may be estimated that asphalt will be from one-fourth to one-third more, and will cost during the remainder of its lifetime perhaps ten or fifteen times as much for repairs as a brick pavement.

A brick pavement, constructed in accordance with the specifications adopted by the National Brick Manufacturers' Association, will last for twenty-five years or longer. If it does not, there is something wrong in the construction. This is the question that is worrying engineers to-day, not the question of getting good brick, for, through the individual efforts of the manufacturers, good brick can be secured in most every locality at a reasonable figure.

Brick pavements have sometimes been brought into disrepute on account of the contractor's failure to comply with the specifications. This occurs where contracts are let to irresponsible parties, which is often the case. Our efforts to educate the public as to the best and most economical pavement that can be constructed must not be interfered with, and it might be a good idea for the manufacturers to protect themselves by refusing to sell their brick to contractors who do poor work. We recognize the fact that the use of our most excellent material has not expanded in the same way as the use of other materials, and

I believe that the poor work done by some contractors is one of the causes.

I might mention here one bad characteristic of some city officials, and that is an inclination to cut the price of brick pavement to the lowest possible figure, and more especially the awarding of contracts to the lowest bidder, whether he be an experienced and reliable contractor or not. It must not be forgotten that the contractor has to pay living wages, and he must have a fair profit, and if the price bid is below a reasonable point he will, without regard to the specifications, make good the loss in some other way.

Let me say in conclusion that brick pavements, if properly presented, will win against all competitors, and if members of this association will be more active in their efforts to educate and agitate for brick roads in the future than they have been in the past the demand for brick pavements will be materially increased.

I thank you, gentlemen, for this privilege. (Applause.)

Discussion.

President Rawson: We have with us Mr. Will S. Purington, of Galesburg, Ill., who represents the largest paving brick plant in the country. We would all like to hear from him. (Applause).

Mr. W. S. Purington, Galesburg: I do not think it is possible for me to add very much to what Mr. Brecht has said. A question has been raised in regard to carrying out fully the specifications adopted by the National Brick Manufacturers' Association a few years ago, and that is in regard to whether the cement filler is the best filler. I would like to ask Mr. Brecht if he carries out the specifications fully here. Do you use the expansion filler and expansion joints, etc?

Mr. Brecht: Yes, sir.

Mr. Purrington: Have you had any trouble with the expansion joints not expanding?

Mr. Brecht: No, we have had no trouble where the expansion joints have been put in. There has been considerable trouble in some streets where the joint was not put in, and there is considerable rumbling noise as the wagons pass over the street at such points.

Mr. Purington: Have you had any trouble with the brick popping on the surface? This has occurred where there was an expansion joint.

Mr. Brecht: We have had no trouble of that sort.

Mr. Purington: I know of one case where there was a block put down strictly in acordance with the specifications, and there was two or three square yards where the expansion took place and popped the brick off. The expansion joint was of asphalt. We have with us a gentleman who has laid as much pavement as any one in this part of the country,—Mr. Ford, of Cedar Rapids,—and I would like to hear from him on the subject.

Mr. Ford, Cedar Rapids, Iowa: My experience in laying brick pavements has been that Portland cement filler has given the best satisfaction. I have never had any trouble with expansion joints where they have been put in properly. We have never had a piece of pavement that has done what Mr. Purington calls "pop," and I think if the expansion joint is put in properly there is no excuse for it. As I say, the Portland cement filler we have found to be the best.

President Rawson: Mr. Ford has had considerable exxperience in this line of work.

Mr. Brecht: I would like to hear from Mr. Brereton. He knows something in regard to the paving situation in this city.

Mr. W. H. Brereton, Des Moines: I came here to hear and not to be heard. I do not know that I can say anything that will be of any benefit more than has been said. I am aware of some instances where asphalt pavement has been introduced into Des Moines. When the Barber Asphalt Company dropped in here they went to work and got men out to petition the abutting property owners of the street, and they would come before the Council with a list of the majority of the property owners. How they got them I do not know, but the two years I was in the Council, everything was asphalt. It seemed to me the trouble was the brick people did not have money enough to meet the proposition. I think if the brick men had interested themselves and oiled these things so the brick pavements would have run along a little smoother, we would not have as many miles of asphalt streets as we have today. I think brick pavements are the best pavements that have been introduced in the city of Des Moines. (Applause). I think the asphalt interests have done Des Moines an injustice. It is a rule here that the majority shall rule, and the man in public office has to stand by the will of the majority, but when these petitions were presented by the property owners of Des Moines, I could not stand with the majority the way they would get these petitions out petitioning the street for asphalt, naming the price, and the petitions when presented was an injustice to the property owners and citizens of Des Moines. They not only got a majority of the property owners but they stated the price, and the men in the minority had to take asphalt instead of brick, and they paid for it at the price which was offered, and in that case, I think the minority was having it rubbed into them a little, and I stood by the minority. I think the men who have to pay for the pavement should be entitled to competition, and that was one reason why I was so bitter against the asphalt combine. The minority never got any competition, but they got asphalt at $1.98, whether they wanted it or not, and I think it was a great injustice.

Treas.-Elect F. A. Stephenson.

President Rawson: The next number on the programme is a paper on "Continuous Kilns vs. Down Draft Kilns" by Mr. D. A. Morey. These are not the kind of kilns that Mr. Randall had experience with in Milwaukee. (Laughter).

CONTINUOUS KILNS VERSUS DOWN-DRAFT KILNS.

By D. A. Morey, Ottumwa, Iowa.

Mr. President and Gentlemen of the Convention:

This subject of continuous kilns versus up-draft kilns is one that may be drawn out pretty well. For the last ten years or so it has been gone over pretty thoroughly in all the conventions, both national and State. The clay journals have taken up the matter and written it up pretty liberally, and it don't leave a man very much to bring out in the way of a paper that has not been pretty thoroughly threshed over. I have been called on, I presume, because Mr. Rawson knew I had both continuous and down-draft kilns and had experience with both of them.

While I have met men who had both kinds, I am willing to admit that each kind of kiln has its proper place, and I think I know of a great many places where the old-fashioned up-draft kiln is just the thing. In fact, in the great brick-producing section in this country, I think, they are practically burning brick the same way they did thirty-five or forty years ago, and that is in the Hudson river district, where they produce more brick to a given territory than any other section of the United States or the world, and I think without exception they are all of them using the old-fashioned clamp up-draft kilns, and they are certainly successful brick manufacturers.

What I have to say on the subject of "Continuous Kilns Versus Down-Draft Kilns" will be very brief, and is only in a comparative way as to the expense of installation of the continuous kiln. From my experience the building of a continuous kiln for a capacity of 1,000,000 brick per month—a kiln with twenty-two chambers, twelve feet wide, thirty-five feet long and eight feet high, and a stack 100 to 150 feet high — would cost from $14,000 to $16,000, depending on local conditions as to the cost of labor, material, etc.

For the burning of 1,000,000 brick per month in down-draft kilns would require six kilns, each to hold 175,000 to 180,000 brick. Burning each kiln about once a month would produce about the same quantity of brick as a continuous kiln such as I have mentioned.

Six such kilns would cost to build from $30,000 to $35,000. This would give a saving on investment of about $15,000 in favor of the continuous kiln. Comparative cost of fuel, using the same grade of coal, we have found the saving to be about 65 per cent. in favor of the continuous kiln; the cost of labor for burning in the continuous kiln to be less than 20 cents per thousand, while the cost for labor in down-draft kilns was about 40 cents. The cost of putting brick in and taking them out is about the same.

As to comparative cost of repairs, our kiln has been in operation about six years and has burned about 60,000,000 brick, and the repair account for this time, outside of taking care of the roof, would be less than $100, while our cost for kiln repairs for the down-draft kiln was about 47 cents per thousand. After removing the brick the cleaning and putting in order for the next setting is of very small expense. The kiln floor being solid and there being no clinkers, the chambers can be put in order in a few minutes and at an average expense of not more than 50 cents each.

While the cleaning of furnaces in down-draft kilns can take a couple of men a day or two, all in all we consider the continuous kiln, outside of putting in and taking out brick, as compared to down-draft kilns of the very best construction, to be at least 65 per cent. cheaper than down-draft kilns for both their building and operation.

Some people claim that the continuous kiln is just as good for paving brick as the down-draft kiln, but my actual experience has not convinced me that such is the case.

Before I built my continuous kiln I went to Catskill, N. Y., and carefully looked over what that gentleman claimed was the largest continuous kiln in the world. It was built specially for paving brick. He was also burning paving brick in down-draft kilns, of which he had ten, and so far as I could see, the brick burned in the continuous kiln were just as good as those burned in down-draft kilns. I may remark here, however, that Mr. Haigh's kiln is the semi-continuous kiln, and is fired in part from furnaces along the sides, instead of entirely through the top.

One decided advantage in favor of the continuous kiln is the saving in cost for repairs. Except for the roof, and we put on a new roof about every year, our continuous kiln costs us little or nothing for repairs. Everybody using down-draft kilns will appreciate that this is quite an item of saving. I figure that it costs us 47 cents a thousand brick made for maintenance of down-draft kilns. Besides, the life of a continuous kiln is much longer than the life of a down-draft kiln.

It costs considerable to clean out the flues of down-draft kilns, get out the clinkers and make good the fire boxes. All of this entails considerable work. I have found that my continuous kiln is easily kept ready for burning. We never have any clinkers in that. The coal goes down through the top and sifts through the brick, and when it gets to the bottom there is nothing left but a little ashes. The amount of ashes depends in part on the quality of coal used. Dirty coal produces more ashes than clean coal. I think we get better results in the continuous kiln when we use a coal that leaves little ashes.

I have here a letter which I want to read. While it was written some years ago, I believe it has never been published, and I really think it is both interesting and instructive. It was written by Prof. Edward Orton, Jr., of Columbus, Ohio. He does not speak of any certain kinds of continuous kiln, or how to build them, but speaks of the results of burning clay wares in continuous kilns.

OHIO STATE UNIVERSITY,
Department of Ceramics and Clayworking.
EDWARD ORTON, JR., E. M., DIRECTOR.

COLUMBUS, Ohio, Oct. 18, 1901.

Mr. I. M. Justice, Erie, Pa.:

My Dear Sir—Replying to your inquiry of the 17th, I would like to say that I have already expressed myself, publicly and privately, in favor of the general principles of the continuous kiln system. I have not limited my recommendations to brick or any sort of ware, but have stated that I believe that the principle is applicable to the burning of ceramic products of any sort. This statement is not merely a matter of belief, but a matter of recorded fact. We have only to turn to the experience of Germany, France, Belgium and Sweden to find wares of every imaginable variety, from fine porcelain down, being successfully produced in continuous kilns. I do not mean to say by this that any one form of continuous kiln is suited to all kinds of ware. Such would be a gross misstatement of the facts. What I do desire to say is that the principle is scientifically correct, and that a kiln can be designed which will successfully treat any particular kind of ware which it is desired to burn. The adjustment of the dimensions and shape of the kiln to the requirements to be made of it is a matter which requires experience and training and is a profession by itself in countries where these kilns are extensively used. In America the continuous kiln has not attained the success nor the credit which the real excellence of the principle deserves. There have been many successful instances of continuous kilns in this country, but there have also been many unsuccessful ones. It is my opinion that these latter have come more frequently from the lack of intelligent operation and treatment of the kiln than from any inherent fault of the kiln itself. We have not always thought it necessary hitherto to use high-class and technically trained men for their operation, nor even for their construction. But the day has now arrived when we cannot expect to avoid this necessity. I do not think that a clayworker takes any more risk of failure on himself in installing a continuous kiln plant than in installing a new dryer or new machinery, provided he has the services of men who understand the principles and practice of handling such kilns.

Yours very truly,
EDWARD ORTON, JR., E. M.

Discussion.

President Rawson: Mr. Fairchild, I believe you have a continuous kiln at your plant at Sioux City. What can you tell us about it?

Mr. G. N. Fairchild: Yes, we have burned in continuous kilns for a number of years, but we cannot operate our continuous kiln with so little expense for repairs as Mr. Morey does his. Our repairs are quite heavy, and that seems to be the only difference between Mr. Morey's kiln and ours.

Fred Talbot, St. Louis, Mo.: Mr. Morey says on his down draft kilns, it costs him about 47 cents a thousand to repair his kilns. It appears to me that is about $70.00 a kiln. What does he build his kilns of?

Mr. Morey: That was with reference to kilns built some time ago—built by one of the best known kiln men at that time, and I want to say this, that the kilns were not nearly so well built as I should build a kiln of this kind at the present time. In making this comparison of 47 cents. I may say it was for the maintenance and general wear and tear and final discarding of that kiln. There were a great many times that we burned brick in these kilns that the cost was a great deal less than 47 cents, and there were other times when the crown fell in, and we had to put in new crowns, then it was more than that. We are building some down draft kilns ourselves, and the cost of maintenance will not be so large.

W. S. Purington, Galesburg, Ill.

W. S. Purington: It costs us about 60 cents a thousand, actual figures, to keep our down-draft kilns in repair.

President Rawson: There is a man for you to go after, Mr. Talbot.

Mr. Morey: Mr. Purington has traveled a little bit, and he knows a good deal about kilns and the cost, etc. I do not think he has any continuous kilns at his plant, but I have an idea he has seen a good many, and I would like to have an expression from him in regard to burning such brick as we are mentioning.

Mr. Purington: Not knowing what kind of brick you are turning out, or how long it takes you to burn them, I cannot say much.

Mr. Morey: It takes us about ten days to burn if the kilns are working and burning pretty good, or if the fireman has not forgotten to wake up at the proper time, we have to take twelve days, depending on conditions. We burn what we call a common brick, not the old fashioned common brick. We make our brick out of shale and they are vitrified, or semi-vitrified, and they are used for any purpose, except paving.

Mr. Purington: In regard to the continuous kiln at Catskill. I happened to see that kiln when it was in operation, and I will say that I never saw more beautiful brick than were burned in that continuous kiln. I also saw another kiln built by Mr. Haigh at Galesburg on a yard which we finally purchased, where Mr. Haigh got his first experience in the burning of paving brick, which cost about $80,000, which is now entirely torn down. But it was built on a little different principle from what Mr. Haigh now builds his kilns. The difficulty then was owing to the shrinkage of the Galesburg clays. They fired from holes in the crown, and while these holes were all right when they started, they were sometimes several inches out of the way when they finished burning; the holes did not remain plumb. We are using about 54 kilns altogether, of all shapes and sizes, large and small. We have two round kilns which we built last year owing to not having room to build square kilns, and I do not think there is any kiln more economical to maintain than the round kiln, but for a large capacity yard they are almost too small to be considered. Any one running paving brick plants knows it costs money to maintain them. The cost of the maintenance of continuous kilns given by Mr. Morey, surprises me, for I know the maintenance of that kiln at Galesburg was enormous. This was due, in a large measure, to the "doors" or openings which they had to make after each burn in order to get the chunks out of the kiln. (Laughter.) We have a lot of Eudaly kilns and a lot of Graves kilns, and some we have constructed of our own designing. The trouble with all our kilns is, there was not enough money expended when they were built; they were not built strong enough. The kiln man always tries to keep the cost down, and his kilns which cost $5,000 or $6,000 should cost $10,000. Evidently the kiln man goes on the theory that he can sell more kilns if he claims they cost $5,000 than if they cost $10,000, but the man who only puts in $5,000, loses in the end. I think the continuous kiln is undoubtedly the most economical so far as fuel is concerned. There is a plant at Alton which has recently put up a continuous kiln and a gas producer. I do not know what the results will be.

President Rawson: We all know that the cement people are crowding in on us. In every little town they are making cement block. We do not want to ask the cement men to tell us about it, and so we have asked Mr. J. O. Reaver, connected with our firm, to tell us something about the cement situation, as we see it. Of course, we may get the clay side, but I think we will get both sides.

RELATIVE MERITS OF CEMENT AND CLAY PRODUCTS.

By J. O. Reaver, Des Moines, Iowa.

Mr. President and Gentlemen of the Convention:

During the past three or four years there has been extensive advertising and exploiting of cement products by cement-machinery makers, who have introduced their molds in every town and community where there was a sand bank close at hand and an investor with a few hundred dollars who aspired to be a manufacturer. With devices innumerable on the market, the strife has been keen between these machine makers, the advertising widespread and the tempting tales of riches easily acquired have induced hundreds to go into the business. The field of the brick and tile manufacturer has been especially aimed at by the cement and sand enthusiasts, and the world has been promised a cheaper and "just as good and better" material for building and construction of all kinds than clay. So far the only thing that has been accomplished has been the production of a cheaper material—cheaper in that sense of the term which means inferior quality.

Cement is adapted to many uses, and when intelligently handled and properly combined with other materials probably has no equal for certain classes of construction; but with every Tom, Dick or Harry, who never manufactured anything before, mixing it up without knowledge of its properties, and with no idea of the results of his experiment, then palming it off on his neighbor as "just as good," it has certainly been one of the biggest bunco games of recent years.

For a time the cement wave threatened to engulf the clay manufacturer, and doom for his carefully built up business was written on every hand—if you believed the claims of the cement promoters. Happily any fears of this sort have been dispelled —and no one has contributed more to this than the maker of cement products himself. Instead of making the best article he could, the competition of the sand man across the way has led him to draw heavily on his own sand bank, and the ever-present idea of making as cheap as possible something that is to be cheap in price has made it extremely problematical what a man was getting when he bought cement products.

That any article made from cement and sand and fashioned in the forms made popular by clayworkers can have equal merit with burned clay every one of you will be quick to deny, but the bold assertions and false assumptions of the cement-machine promoters that the products of their molds are "just as good or better" need to be corrected if only to maintain our self-respect—not counting the service we will be doing our fellows in preventing them from being victimized.

Take cement blocks, for instance, the manufacture of which has been pushed harder than any other form of cement product. Do they compare in any way with the clay product they seek to displace? Are they as good, are they cheaper, are they as strong and durable, can they be utilized for as many different forms of construction and meet as many requirements in resisting the ravages of time and the elements? The answer to all these questions must be in the negative.

Vitrified clay brick and block are impervious to moisture. The cement block, with all its air spaces and double air spaces, has not yet been manufactured that will not absorb moisture and retain dampness, and the manufacturers of blocks, realizing this fatal defect, have sought and are still seeking a cure for it. Some machine makers offer a special recipe or preparation for water-proofing, thus acknowledging that their air-spaced blocks are not what they have pretended to be.

Made with any semblance of honesty they have not been shown to be cheaper than clay. A writer in the current issue of a trade paper devoted to cement interests, giving his method of making what he calls good blocks, ends with the statement that if his directions are followed the cost will be no greater than brick or lumber.

As to strength and durability, thousands of years of use attest the lasting qualities of burned clay, and tests of every kind have demonstrated its strength. Cement concrete in the form of building blocks, being of such recent use, has not had the tests that burned clay has been subjected to, but it must be regarded as less durable and less able to withstand the "gnawing tooth of time" when its ability to absorb moisture, the alternate effects of freezing and thawing, expansion and contraction are considered.

The cement block can certainly have no claim for recognition from an artistic standpoint as compared to brick and other forms of clay, with their wide range of design and permanence of natural colorings. Concrete blocks are a failure even as an imitation of stone, a sad substitute for a beautiful material.

The fire-resisting qualities of well-burned clay are too well known to make extended mention necessary. Cement blocks are claimed to be fire-proof, but are they? Throwing some light on this question is the report of an insurance inspector of a fire which destroyed a building made of "patent stone" at Geary, O. T., in May, 1904. After stating that the adjoining building, where the fire originated, was made of fairly good brick and stood up for half an hour after the cement building collapsed, he adds: "The patent-stone building was constructed of blocks 30 inches long, 10 inches wide and 9 inches high. Each block has two hollow spaces 4 by 10 inches. Eye-witnesses state that as soon as the roof got to burning well the walls commenced to bulge and the blocks fell apart with reports like pistol shots, one-half of the block going one way and tthe other half the other. Toward the rear is a portion of the wall, about ten feet high on the south side, and the entire rear wall up to the second story was still standing. However, the stone in every block (including those next the ground as well as those higher up) was completely disintegrated. The portion of the wall standing is badly cracked and worthless. Not a drop of water was thrown on this building at any time." But we don't need to go as far away as Oklahoma, nor is it necessary to have people antagonistic to cement demonstrate its unfitness as a fire-proof material. The machine men are obliging. They furnish their own illustrations. Last year, at the Iowa State Fair, a machine maker built a house of blocks, presumably the best he knew how to make, and advertised widely a fire test. Not being present, I cannot say how severe the test was, but I have the word of a member of this association, who observed the effects of the fire, and who states that the building was cracked on every side, from top to bottom, some cracks large enough to throw a cat through—with the exception of the front of the building. On the front there were two openings, a door and a window, and the only crack was above the door. My friend did not have his camera at the time, but the next morning hurried out to get views of the building, only to find it had been torn down and removed. That same day appeared in the daily papers a half-page advertisement announcing the complete success of the test and a picture showing the front only of the building, the skill of the photographer and engraver having eliminated the one crack over the door. This unscrupulous dealing with the truth shows what reliance may be placed in the statements of the machine makers.

J. O. Reaver, Des Moines.

I think the indictment against cement block as compared with clay is complete. Summed up and stated briefly, it is charged with not being fire-proof or water-proof, with not having proved durability or strength, with not being honest or artistic in construction. It will be found guilty and be condemned as rapidly as the good people become acquainted with it.

The machine manufacturer is still abroad in the land, however, with his get-rich quick schemes. His latest contribution is a complete sewer-pipe outfit which produces "just as good or better" pipe than that made from clay, and, of course, so much cheaper that we are put out of business at once. But the machine maker, in his frantic chase after the dollars of the gullible, ignores the experience of former adventurers in this line.

There was a spasm of cement sewer-pipe-making about thirty years ago, and nearly every city of the country felt the effects of it. The experience was a disastrous and expensive one in most places, and the complete failure of the material was chronicled by the engineers of the leading cities of the United States, all of them declaring its unfitness and registering their views as to the superiority of clay pipe. The reasons given for the failure of cement pipe were numerous, but the principal ones were that it had not requisite strength, even though made thicker and heavier than vitrified clay; that it was seldom of uniform texture, and that it was subject to disintegration from various causes. Several Iowa railroads, about twenty years ago, made cement pipe for use as culverts under and alongside their embankments. These cement pipe have been replaced long ago with culverts of clay pipe and other forms of construction, and the railroads are now and have for years past been using thousands of feet of clay pipe, for the reason that it is considered more reliable and durable. Cement pipe can undoubtedly be made to stand a fair degree of pressure, but it takes a good quality of cement and too much of it to make the production profitable to the makers. The same conditions apply to its manufacture as to cement blocks. There is no way of discriminating between the improperly made and properly made article. The temptation is always to use more sand, and the purchaser will always be at the mercy of the dishonest and ignorant mixer of materials. No chain is stronger than its weakest link, and no line of pipe can be stronger than the weakest piece therein, the caving in of a single piece, which often happened in the former use of these sand pipe, obstructing the whole sewer.

What has happened once it is reasonable to suppose will happen again, and it is not anticipated that cement pipe will become a serious competitor with clay, but we will have with us for some time to come the activity of the machine man and the cement manufacturer to combat, and also have some interesting experiences in setting people on the right road—the clay road.

That the concrete productions have any intrinsic merit comparable with clay, or that in any part of the clay industry the cement imitation is a serious or worthy competitor, I do not believe; but it seems to me that it is the duty of every member of this association to present in his community and to his patrons such arguments as he knows to be true against the use of a material inferior to his own product, and by sending forth from his kilns the very best ware he can produce at as reasonable price as he can with a fair return for his labors, forever set at rest any imputation that there is any material on earth or within it as good for the uses to which it has been put as burned clay. (Applause.)

Mr. O. T. Denison, Mason City, Iowa: I want to offer a motion that this Association appoint a committee upon the revision of amendment of the drainage laws as they now exist, and in appreciation of Prof. Kent's endeavors, I move that this Association raise a committee of three consisting of Prof. D. A. Kent, J. B. McHose and Hollis Rawson to attend to whatever may be necessary to secure the amendment of the laws at the present session of the Legislature.

The motion was seconded by Mr. Wilson, and carried.

Prof. Rawson: The next number on the programme is a paper on "Gas Engines" by Prof. G. W. Bissell, of Ames, Iowa. The professor has always been one of our standbys on scientific questions.

GAS ENGINES.

By G. W. Bissell, Ames, Iowa

Mr. President and Gentlemen of the Convention:

The gasoline engine for small powers is now well known and extensively and successfully used for various purposes in all parts of the country, especially where manufactured or natural gas is not available.

Other designs of the internal-combustion engine, using kerosene, crude oil, naphtha and alcohol, have been produced for special conditions or in competition with the gasoline type.

The price of gasoline is slowly advancing, due in part to the fact that certain extensive oil regions, as those in Texas, produce oils not yielding the gasoline and kindred distillates. On this account the use of kerosene and natural alcohol is receiving increasing attention.

Kerosene or petroleum engines are now available and give satisfactory service. Natural alcohol can be produced so much more cheaply than any other of the liquid fuels that its use is being suggested by many, and investigations are now in progress in many quarters to determine the best design of engine for this fuel.

It is probably a safe prediction that before many years the alcohol engine will be an important factor in small powers.

The dangers of handling and storing the liquid fuels in places remote from natural or pipe-line supplies limit their use to small units of power.

At the same time the inherent advantages of the internal combustion engine over the steam engine are so great that if larger units were practicable they would "fill a long-felt want."

The principal object of this paper is to discuss the gas engine for large units of power, especially as to its usefulness in this and other Western States where natural gas and waste gas from manufacturing processes, such as blast furnaces, are not available.

If coal or other solid fuel be burned with a restricted suply of air there will result a gas which is combustible, and if this gas be conducted to a gas engine of proper design and mixed with the right proportion of air, the mixture may be exploded and power developed in the cylinder of the engine.

The apparatus used to generate gas on this principle is called a gas producer or producer. The producer is frequently used for generating gas for lighting and other domestic or manufacturing purposes, and has been used as a source of power in gas engines in England and continental Europe for many years.

In this country, until relatively recently, the low cost of coals, among other things, has prevented rapid development of the producer gas engine as a prime mover, but competition in all lines of business, especially in manufacturing, demands saving in cost of production in all possible ways, and the fuel bill should receive its share of attention. When this is the case the following facts are of interest:

1. Assuming that coal costing $2.50 per ton, containing 10,000 heat units per pound, is burned under a boiler whose efficiency is 60 per cent., which supplies steam at 85 pounds pressure to a 200-horse-power Corliss engine using 26 pounds of steam per indicated, or 30.5 pounds per useful or effective horse-power per hour, the total efficiency of this steam plant is 4.8 per cent.

2. With the same fuel at the same price a producer gas engine will show a total efficiency of 11.0 per cent., being 2.3 times as efficient as the steam engine cited.

3. That the above assumed cases are not inconsistent with actual results is witnessed by the following comparative summary of tests recently made by the United States Geological Survey, compiled from United States Geological Survey bulletin No. 261:

TABLE I.

	Dry Coal per Kilowatt Hour.		Ratio
Samples.	*Steam Plant.*	*P'ducer Plant.*	*Economy.*
Alabama No. 2	5.50	2.21	2.48
Colorado No. 1	6.51	2.30	2.83
Illinois No. 3	5.85	2.41	2.43
Illinois No. 4	6.47	2.37	2.73
Indiana No. 1	5.56	2.60	2.14
Indiana No. 2	5.85	2.08	2.81
Indian Territory No. 1	5.44	2.46	2.21
Kentucky No. 3	5.68	2.57	2.21
Missouri No. 2	6.62	2.30	2.88
West Virginia No. 1	5.25	2.12	2.48
West Virginia No. 4	4.87	1.74	2.80
West Virginia No. 9	4.66	2.14	2.18
West Virginia No. 12	4.75	2.02	2.35
Wyoming No. 2	7.94	2.78	2.85
Averages	5.71	2.29	2.49

From which it apears that for an output of approximately 200 horse power the average cost per kilo-watt hour in pounds of dry coal for the steam plant was 5.71 and for the producer gas engine plant was 2.29, the ratio being 2.5 in favor of the latter. The tests referred to were made with fourteen varieties of soft coal from over the United States, as shown in the table.

Prof. G. W. Bissell, Ames, Iowa.

and more expenseive than necessary, which

Had time permitted, the writer could have presented other figures equally conclusive.

Until recently the use of soft coals for producer gas engines has been considered inadvisable on account of the sulphur of the fuel and the distillates, such as tar, evolved in the producer. The tests above quoted are especially interesting as showing the possibility of overcoming these objections, at least in a large measure, and as pointing to the ultimate practicability of using soft coals for producer gas engines.

In addition to the saving in fuel to be thus effected by the substitution of the producer gas engine for the steam engine, there are some other advantages which may be enumerated, as follows:

(a) Smokeless combustion, for which there is an ever-increasing popular and righteous demand.

(b) The use of the gas holder permits the generation of the gas at a uniform rate, regardless of demand, and therefore is the most economical manner, considering fixed charges and maintenance, and also (c) the consequent "always ready" condition of the plant to respond to variations in demand for power.

(d) Elimination of radiation and similar losses, and consequently

(e) The feasibility of operating engines, located as convenience may require, independently of the location of the coal pile.

(f) Comparative freedom from explosion of producer as compared with a steam boiler.

Some of the disadvantages of the producer gas engine are:

(a) First cost of plant is about 25 per cent. greater than the steam plant for the same service.

(b) The noise of the exhaust may be a nuisance, its deadening or suppression being troublesome and expensive to effect.

(c) The vibration of the engine.

(d) Difficult speed regulation.

(e) The complication of the engine and sometimes of the producer requiring special knowledge and skill in the attendants.

Other advantages and disadvantages might be named, but saving in operative labor should not be adduced as an advantage for the gas engine. Too much harm has already been done by preaching the gospel of labor saving as applied to gas engines. The fact is that the gas-engine power plant requires as much and as good attendance as the steam plant, and should have it.

As to the present status of the producer gas engine in this country, several plants have been installed and are in more or less successful operation, and each succeeding installation seems to meet the requirements better than its predecessor. The builders of repute are very patient in studying difficulties and in their efforts to overcome them, and are liberal with their customers in the matter of trial periods and payments, as they should be until their engines are proved.

The writer has no doubt whatever that the producer gas engines as a prime mover for shops, factories and general power plants from 100 horse-power and upward will very soon vindicate its right to consideration as a rival of the steam engine, and he expects to see the producer gas-engine electric power plant established at coal mines in this and other states and its output distributed electrically over long distances, as is now done in favored localities from water power.

It may be of interest to know that the electric-light plant of the city of Algona is operated by a 150-horse-power producer gas engine built by Fairbanks, Morse & Co. (Applause.)

Prof. Rawson: I have neglected to say anything about going to Ames tomorrow to visit the college. We have made arrangements with the Chicago & Northwestern Railroad for special rates if we can get up a party. Prof. Beyers is here and can tell you more about the trip.

Prof. Beyers: In behalf of the College, I extend you all an invitation to visit the college plant, and so far as the testing of manufacturing products are concerned, we have a laboratory and are prepared to make tests of raw material. We have not been able to make very much improvement in regard to the commercial testing plant. We will see to it that the buildings are all open to the members of the Convention. There is in progress at the present time a two-week course in stock and grain judging and domestic science and dairying. They have all modern conveniences and are prepared to do the work in an admirable way. I am sure such of you who can find time to look through the engineering department will be interested, and we hope that as many of you as possible will make the trip. I think it would be advisable to inform the Secretary so he will know about the number who contemplate going so the railway company can make arrangements. Trains leave at 7:30 and 8:10, and returning leave Ames at 12:50, 5:05 and 6:30.

President Rawson: I trust as many as possible will go, and let the Secretary know as soon as you can. We will now hear the report of the Committee of Resolutions, of which Mr. Lewis is chairman.

Report of Committee on Resolutions.

Mr. Lewis: Before I read the report, I want to say a word about the resolution in regard to the ceramic department at the State College. Years ago, there was adopted a motto for Iowa, it was used last night. It is "In all things good, Iowa affords the best." A gentleman read a paper yesterday afternoon in which he stated that Iowa had taken a back seat to Ohio in her ceramic school. This should not be. If we are going to live up to our motto, we want to stand first. I believe this Association is largely instrumental in bringing about some things for the College, buildings and apparatus and things which help in the work, and if we can do that, I think we should help still further. If we do not ask for these things, we will not get them.

REPORT OF COMMITTEE ON RESOLUTIONS.

To the Twenty-sixth Annual Session of the Iowa Brick and Tile Association, in Convention assembled:

Gentlemen:

Resolved, That we favor the enactment of a primary law which gives every voter an opportunity to have his vote counted for his choice of candidates for public office. That we urge upon the present Legislature the needs of the State College at Ames, and we ask that an appropriation be made in sufficient amount for the purpose of erecting and maintaining a school of ceramics, with all needed apparatus for tests of clay and clay products, similar in a general way to that of the Ohio University.

That we, the members of the Iowa Brick and Tile Association, do claim the right to sell in carload lots to contractors, owners and consumers, and to ship direct to the party or parties making said purchase, and will not recognize any claim for commission made by local merchants into whose town or territory said shipment is made, when said sale is made directly and wholly by any member or agent of any member of this association, and not with any help from said retail merchant or his agent.

That we heartily thank the president of this association, especially, and all the Des Moines clay manufacturers in general, as well as the secretary of this association, for the splendid arrangement and entertainment for the benefits of this association, and that the thanks of this association are also due to all others who have contributed to the arrangements, comforts and pleasure of the association.

W. W. LEWIS,
C. J. HOLMAN,
O. C. PIXLEY,
Committee.

On motion of Mr. O. T. Denison, duly seconded, the report was adopted.

President Rawson: We will now hear from the Committee on Nominations. Mr. Goodwin will give the report.

Report of Committee on Nominations.

W. J. Goodwin: Your committee begs leave to make the following report: For President, C. J. Holman, Sargeant Bluff; Vice-President, Will H. Brecht, Des Moines; Secretary, L. W. Denison, Mason City; Treasurer, F. A. Stephenson, Mason City.

On motion of Mr. J. B. McHose, duly seconded, the report was adopted unanimously.

President Rawson: We have no invitations as yet for next year's meeting, and I do not know just where we will meet.

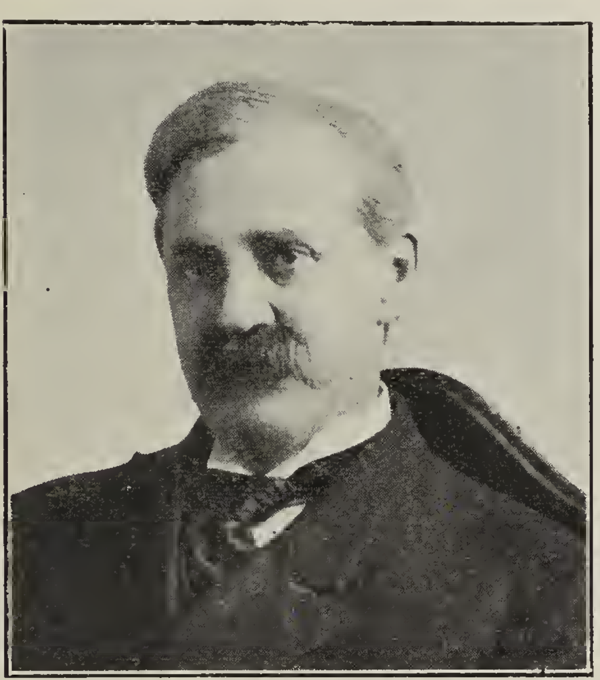
Mr. McHose: That is left to the Executive Committee.

O. T. Denison: Perhaps it would be well to have the treasurer's report before the new treasurer takes the money.

Mr. Holman: It is very short. The amount forwarded from 1904 was $194.00. Net receipts for 1905, after all bills had been paid, $34.58, leaving a balance on hand previous to the convention of $228.50. Of course there will be the fees collected at this meeting.

Mr. Lewis: I wanted to ask something about reduced railroad rates. Several people have asked me, and I would like to know something about it.

President Rawson: We thought probably we could get a two-thirds rate on certificate plan, but so many of the members simply bought mileage and came that way that we have not enough certificates. And besides it would hardly pay us to pay the 25 cents for each certificate and pay the railroad representative, and so we decided we would have to wait and try this some other time. For this afternoon, we have arranged with the street car company for some special cars in which to take the members round to the plants. Only two plants are in operation, that of the Iowa Pipe and Tile Company, and The Flint Paving Brick Company. The street car company will have the cars waiting for us at 2 o'clock and we would like for you all to be at the waiting room as near that time as possible. To-night there is to be an informal smoker in this room about 8:30, to which you are all invited. Guess this finishes the business of the Convention.



Governor A. B. Cummins.

On motion of Mr. O. T. Denison, Convention adjourned subject to the call of the Executive Committee.

LIST OF MEMBERS.

H. E. Search, Dunlap Manufacturing Company, Bloomington, Ill.
M. W. Blair, Chicago, Ill.
Harry de Joannis, Brick, Chicago, Ill.
George I. Dietrich, Chicago, Ill.
L. E. Rodgers Engineering Company, Chicago, Ill.
E. R. Frazier, Chicago, Ill.
Chicago Brick Machinery Company, Chicago, Ill.
George Hartwell, Chicago, Ill.
W. M. Pratt, Earlville, Ill.
Fred Titterington, Rock Island, Ill.
T. A. Randall, CLAY-WORKER, Indianapolis, Ind.
John W. Anderson, Jr., Frankfort, Ind.
Dallas County Brick and Tile Company, Adel, Iowa.
S. J. Harris, Adel, Iowa.
Prof. S. W. Beyer, Ames, Iowa.
Prof. A. Marston, Ames, Iowa.
Atlantic Brick and Tile Company, Atlantic, Iowa.
Ben Tramp, Audubon, Iowa.
Ollie Wilson, Barnes City, Iowa.
Boone Brick, Tile and Paving Company, Boone, Iowa.
J. B. McHose, Boone, Iowa.
J. F. Yegge, Boone, Iowa.
Centerville Brick and Construction Company, Centerville, Iowa.
J. M. Crabill, Clarinda, Iowa.
C. A. Marshall, Jr., Cresco, Iowa.
Charles Tramp, Creston, Iowa.
H. S. Tramp, Creston, Iowa.
Eagle Iron Works, Des Moines, Iowa.
Des Moines Clay Manufacturing Company, Des Moines, Iowa.
W. J. Goodwin, Des Moines, Iowa.
S. C. Lee (Iowa Brick Company), Des Moines, Iowa.
C. A. Rawson, Des Moines, Iowa.
James Maine & Sons Company, Des Moines, Iowa.
Barber Asphalt Company, Des Moines, Iowa.
John D. Stewart, Standard Oil Company, Des Moines, Iowa.
Globe Machinery and Supply Company, Des Moines, Iowa.
Flint Brick Company, Des Moines, Iowa.
H. L. Frost, Des Moines, Iowa.
Des Moines Manufacturing Supply Company (F. J. Griswold), Des Moines, Iowa.
W. H. Brereton, Des Moines, Iowa.
DeSoto Brick and Tile Company, De Soto, Iowa.
J. A. Bramhall, Des Moines, Iowa.
American Iron Works, Des Moines, Iowa.
W. J. Combs, Des Moines, Iowa
John Keffner, Des Moines, Iowa.
W. L. Williams, Des Moines, Iowa.
Shackelford Brick Company, Des Moines, Iowa.
J. A. Wilson, Dows, Iowa.
C. W. Long, Dows, Iowa.
James W. Brandon, Dysart, Iowa.
George Hix, Dysart, Iowa.
C. Brandon, Dysart, Iowa.
C. G. Kaiser, Dysart, Iowa.
J. A. Trott & Son, Eldon, Iowa.
C. A. Reaver, Eldora, Iowa.
J. L. Raney, Fairfield, Iowa.
G. H. Straight, Fonda, Iowa.
Ft. Dodge Brick Company, Ft. Dodge, Iowa.
Iowa Foundry and Manufacturing Company, Ft. Dodge, Iowa.
W. S. Purington, Galesburg, Ill.
C. C. Gross, Garrison, Iowa.
L. E. Dautremont, Garrison, Iowa.
Thomas Goodwin, Grand Junction, Iowa.
H. H. McHose, Grinnell, Iowa.
C. A. Smith, Grinnell, Iowa.
Harvey Brick and Tile Company, Harvey, Iowa.
F. W. Heidenreich, Hedrick, Iowa.
Jewell Brick and Tile Company, Jewell, Iowa.
George Sehnurr, Kalo, Iowa.
H. Bachman, Madrid, Iowa.
H. F. Zartman, Madrid, Iowa.
J. W. Wagner, Marengo, Iowa.
American Brick and Tile Company, Mason City, Iowa.
L. W. Denison, Mason City, Iowa.
F. A. Stephenson, Mason City, Iowa.
C. E. McHose, Maxwell, Iowa.
F. Dutremont, Monticello, Iowa.
G. G. Wheat, Mt. Vernon, Iowa.
F. E. Martin, New Sharon, Iowa.
E. J. Smith & Sons, North English, Iowa.
Omar Smith, H. Brewer & Co., North English, Iowa.
George Seigel, Osceola, Iowa.
D. A. Morey, Ottumwa, Iowa.
W. E. Supernois, Packwood, Iowa.
H. H. Pentecost, Penora, Iowa.
C. J. Holman, Sargent's Bluff, Iowa.
C. W. Ritz, Sioux City, Iowa.
C. F. Green, Sioux City, Iowa.
M. P. Typper, Sioux Rapids, Iowa.
J. S. Cooley, Sioux Rapids, Iowa.
G. N. Fairchild, Sioux City, Iowa.
E. C. Wales, South English B. & T. Company, South English, Iowa.
G. H. Kettel, Tipton, Iowa.
Platt Brick Company, Van Meter, Iowa.
J. G. Nicholson, What Cheer, Iowa.
W. W. Lewis, Williamsburg, Iowa.
H. Brewer & Co., Tecumseh, Mich.
Improvement Bulletin, Minneapolis, Minn.
Laclede Fire Brick Manufacturing Company, St. Louis, Mo.
F. A. White, Versailles, Mo.
J. F. Smith, Omaha, Neb.
American Clay Machinery Company, Bucyrus, Ohio.
J. D. Fate Company, Plymouth, Ohio.

THE SOCIAL SIDE OF THE IOWA CONVENTION.

The Des Moines Convention was a success in every respect, but particularly so from the social viewpoint. Every visitor from the time of his arrival until his departure was not only made to feel welcome but that the best that Iowa afforded was on tap for his especial benefit. President Rawson, himself a host, in every sense of the word, was ably seconded by his neighbors Brecht, Pixley, Goodwin, Reaver, Aulman and Beer, each and all of whom did their utmost to show the visiting clayworkers a good time.

The chief social function was the banquet. A good dinner well served to one hundred or more jolly good fellows, followed by a few short speeches of a pleasing character rounded out an enjoyable evening. Chas. S. Bradshaw, a local celebrity, served as toastmaster in a most admirable manner. He is himself a fluent speaker with a fund of wit that enabled him to score a hit with every introduction. O. T. Denison, of Mason City, T. A. Randall, of Indianapolis, and Hon. N. E. Coffin, of Des Moines, each responded to a formal toast, in a manner that elicited hearty applause.

The trip to the brickyards occupied the time of the delegates Thursday afternoon. The plants of the Iowa Pipe and Tile Company, and the Flint Paving Brick Company, both of which were fully described in the December number of THE CLAY-WORKER were gone through, and the equipment of each thoroughly inspected. The trip was made by trolley and afforded the visitors an opportunity of seeing Des Moines and its environments and of continuing the "button hole" talks which was done so heartily that the party much resembled a family reunion.

The formal entertainment closed with a smoker Thursday night, which was literally a "howling success." There was more speaking, and stories and music galore. There was not a delegate but who will be more than pleased to return to Des Moines to again talk shop and brickyard lore with his fellow craftsman.

Convention Notes.

There was not much in the way of exhibits. A novel display was shown by Mr. J. W. Anderson, Jr., representing the Wallace Mfg. Company, Frankfort, Ind., and consisted of a panel of excellent wire-cut brick framed in oak and bearing the label "Product of Acme Brick Co., Cayuga, Ind., made on a 'Wonder' machine and cut with the Semi-Automatic Cutter, made by The Wallace Mfg. Company, Frankfort, Ind." It is a clever exhibit and we presume will find its way to Philadelphia the week of February 5th.

Fred Talbot, Superintendent of the Laclede Fire Brick Manufacturing Co., St. Louis, was much in evidence, as was also some excellent fire brick bearing their brand.

L. E. Rodgers, Chicago, the waste heat dryer man, delivered a paper on that subject before the convention and was kept busy between sessions answering queries from those seeking information on the use of waste heat.

E. R. Frazier, Chicago, representing Chambers Bros. Company; G. C. Stoll, Chicago, representing American Clay Mfg. Co.; Chas. Burridge, Tecumseh, Michigan, representing H. Brewer & Co.; John J. Moroney, Chicago, of the Chicago Brick Machinery Company; M. W. Blair, Chicago, representing The Atlas Car & Mfg. Co.; L. Aulman, Des Moines, of the Eagle Iron Works; C. B. Platt, Van Meter, of down-draft kiln fame; H. J. Votaw, of Plymouth, Ohio, representing the J. D. Fate Co., together with the representatives of the trade papers, did their full share toward making the convention a notable success.

The opinion seemed to prevail that Sioux City will get the next convention. That city was ably represented by C. J. Holman, who was again elected President; C. N. Fairchild, C. F. Green, C. W. Ritz and J. S. Cooley, who are fully aware of the stunts they will have to perform to keep up the pace set by Des Moines. We predict they will be equal to their opportunity.

The shops of the Eagle Iron Works was visited by many of the delegates, who found abundant evidence of mechanical skill and thoroughness, so necessary in the production of high class heavy machinery. Their line is limited, but what they make, they make good, as was evidenced at the brick plants visited where their dry pans were found in actual use, and doing excellent service.

THE POSSIBILITIES OF PORCELAIN.

BY PROF. CHARLES F. BINNS.

LOVERS OF THE potter and his art are ever prone to become enthusiastic over porcelain. Its delicate grace, its comparative rarity and its endless variety contribute to establish a position which is without parallel in the industrial arts.

The original production of porcelain was a normal event. Just as the Greeks possessing and developing a fine red clay made red pottery, so the Chinese, with the native white clay naturally made white wares. The parallel is incomplete, however, because while the clay used by the Greeks contained within itself every essential to a perfect product, the white clay of the Chinese needed an admixture in order to make possible such a ware as porcelain.

A pottery body needs three properties for its successful working. It must be plastic or it could not be shaped, it must be resistant to fire or it would melt in the heat, it must partially yield to fire or it would remain dull, opaque and soulless.

A red pottery will usually melt at a low heat; a porcelain should withstand a very intense fire, but must contain sufficient fusible matter to produce density and translucency. This is where the skill of the Chinese potters became apparent. They possessed the white clay and associated with it was a fusible rock. This rock they ground and mixed with the clay. A glaze was then compounded of the same fusible rock finely ground and mixed with fern ashes and lime. The resulting magma was painted thickly over the clay and the whole work was burned at one and the same time. With the materials at hand it was not possible to soften the glaze and the heat used was therefore, just that at which the glaze became brilliant. This is now known to be between 2400 and 2500 Fahr. and no wide departure from the range was made. Various dates have been ascribed to the first Chinese porcelain. Beyond doubt it was the first ever made but it is not so old as has been conjectured. The stories that the Chinese made porcelain three thousand years ago must be rejected. Ware one thousand years old is very ancient indeed and the finest Chinese porcelain was produced in the Fifteenth century, A. D.

In the natural progress of nations and the development of trade, porcelain became known in Europe and various legends were current as to its origin. Magic properties were attributed to it as, for instance, that a porcelain cup would immediately burst if poison were poured into it. It was said to be composed of plaster, eggs, the shells of "marine locusts" and the like, and this suggests the origin of the word porcelain. The Portugese word porcella means "little pig" and a certain shell, being shaped like a hog's back, was named porcelana. This shell was used to some extent in the arts by being carved into cameos and personal ornaments. These became porcelana wares and when the new production became known its likeness to the shell work was recognized. The new material thus acquired the French name porcelaine or, in English, porcelain.

The term has often been misapplied as, for instance, in the expressions soft porcelain, semi-porcelain, opaque porcelain and the like. Strictly the name should be confined to hard porcelain made after the Chinese manner, body and glaze being fired together at high temperature. A preliminary gentle fire of the clay is not objectionable being merely for convenience in handling. It does not affect the result. China wares, such as hotel china, Belleek and English Bone china are not porcelains even though they are translucent. They receive the hard fire in the biscuit state only and the glaze is added at a subsequent and less severe burn.

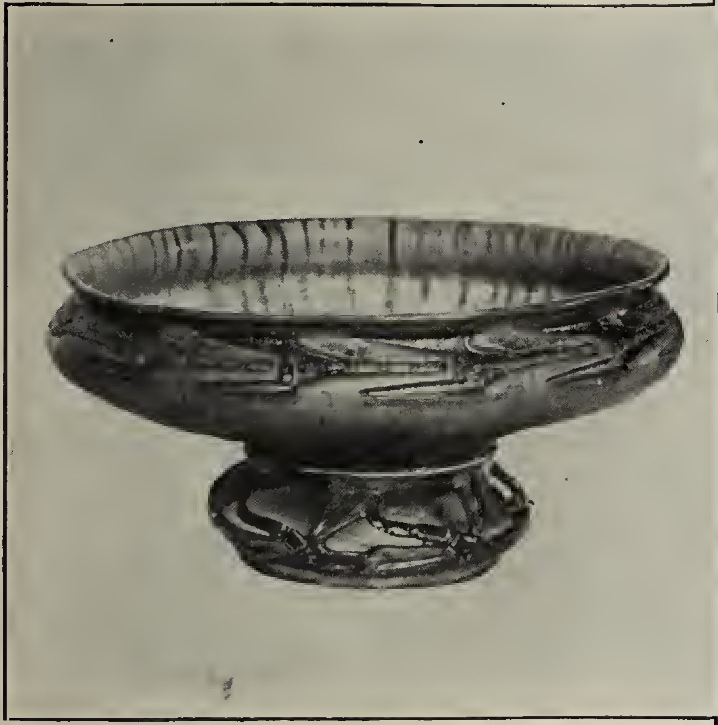
Porcelain in Europe had its beginning at Meissen near Dresden in 1709, though a soft ware had been produced in France some years before. German porcelain was in fact, a discovery, not having been made until the true clay was found. French porcelain, so called, was an invention having been compounded artificially without any natural basis.

Eventually the clay now called kaolin was found in France and true porcelain was made, but the finest French wares are of the soft-paste (pate tendre) period. The name kaolin is an adaptation from the Chinese. In the country the clay was found in a range of hills named Kao-ling (lofty summits) and when the Jesuit missionary, pere d'Entrecolles, wrote particulars of the Chinese work he spoke of the "clay of Kao-ling." Nothing was more natural, then than to call clay kaolin.

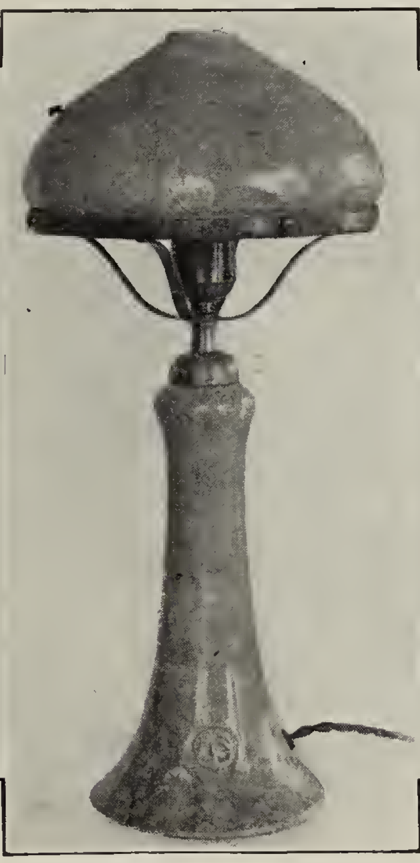
Chinese porcelain may be grouped under three general heads. Under-glaze blue, single colors and over-glaze painting. These were often used together as when a vase in powder blue with white panels would be painted afterwards in colors, but as a broad distinction the arrangement will serve. The first group is largely one for connoisseurs. It is difficult to distinguish the minute variations of color and style unless one has made a special study of the art. The single colors are finely represented in the Walters collection at Baltimore. They are all produced at the high fire and are usually incorporated in the glaze itself. This means that the colorants used are capable of resisting the strongest heat of the kiln and this fact enables one to understand the reason for the extraordinary variety of shades and tints. It was, indeed, a practical impossibility to produce two pieces alike though, of course, two might accidentally correspond exactly.

American Hard Porcelain.

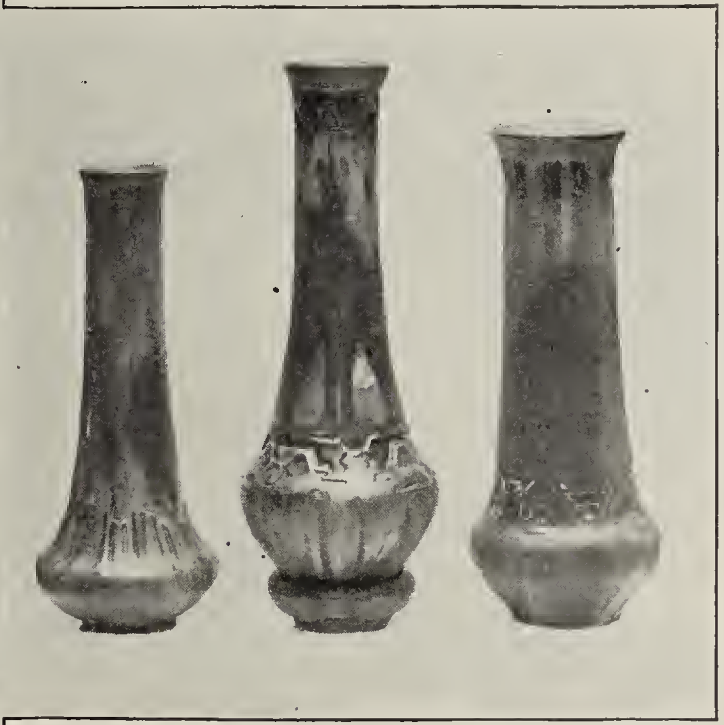
By Mrs. Adelaide Alsop-Robineau.



Bowl, Dragon Design.



Green Crystal Shade.



Matt Brown, Black, Green and Cream Glazes.

In the over-glaze group the porcelain was first fired to completion in plain white. If the cobalt blue were to form part of the decoration this was burned with the glaze at the high fire. The colors and gold were added over the glaze and burned at a low temperature afterward. The practice was just that of modern over-glaze work but the Chinese decorators spared no patience to produce elaborate ornamentation. Many magnificent specimens of this work are in the Garland collection purchased by Mr. J. Pierpont Morgan and now in the Metropolitan Museum.

During the eighteenth century upwards of forty manufacturers of porcelain, hard and soft, were established in Europe being, in a large majority of cases, the playthings of princes, and to this fact may be attributed the differences in procedure between Europe and America. In very few cases were the European factories established for the purpose of making money. The owner of a castle and an estate would found a porcelain studio, hardly to be dignified by the name manufactory, in much the same way as he would build green houses and a bowling alley. It was a means of recreation and a source of interest for himself and his friends, and not for a moment was it thought of as a means of profit. Thus a high degree of skill was acquired by many of the workers and when, as was occasionally the case, the product was offered for sale, it at once commanded attention by its excellent quality. Royal patronage is not always a good thing but it certainly enabled European porcelain to reach the position it now occupies.

Only a few of the eighteenth century manufactories now exist but they are the survival of the fittest. The best workmen gradually gathered at the places which were doing the best work and the others, one by one, ceased to exist. Their life was not in vain, however, for by their action, even for a short time, they encouraged competition and stimulated the desire for fine things.

The lessons of Europe may be profitably applied to America and two questions at once arise in the mind. First, what porcelain is being made here and second, what are the prospects of the future?

There are several large manufactories making hotel china and at least two making Belleek, but, as already explained, neither of these products is really porcelain. So far as we are aware only two attempts at porcelain manufacture have been made.

Miss Louise McLaughlin, of Cincinnati, began some seven years ago to make small pieces of ornamental ware, in porcelain, the technique was by no means perfect but many pleasing effects were secured. Miss McLaughlin followed the Japanese methods, compounding a comparatively low-fusing glaze and a body which was creamy rather than white. The second production was at the hands of Mrs. Adelaide Alsop-Robineau, of Syracuse, who has made a fine porcelain which she treats with colored glazes of different textures.

Neither of these enthusiasts is likely to make much money but they have the satisfaction of expressing themselves in their chosen medium. And what of the future? First, is it desirable that America should produce fine porcelain, and if so, why? It is desirable because a large quantity of porcelain is now imported, and if it were made here it would find a use for native clays and native labor. It is also desirable from the art standpoint. An imported or exotic art is not desirable. It is neither educative nor progressive. Pictures may be an exception, but in pictures America stands far higher than she does in porcelain. The arts of the home should be native and racy of the soil. There is a charm in dye stuffs from our native woods which belong to no chemical product and this holds good throughout the house.

But can it be? Can we, shall we ever produce porcelain which will compete with Europe? Most assuredly, yes. The way is open. The ware has been made in our laboratories and studios and it only remains to foster it upon a larger scale.

Here, however, a note of warning must be sounded. Porcelain making for profit pure and simple is a foredoomed failure. It must be undertaken at first from altruistic motives. Two possibilities present themselves, the one that some successful manufacturer shall produce a side line of fine wares without regard to profit. The other that some wealthy man or men shall endow a small factory so the start may be made upon the right basis. In other words the excellence of the product and not the amount of the profit must be the guiding principle. Unless this be clearly understood the attempt had better not be made.

America leads in so many art industries that it is difficult to understand why porcelain should be omitted. We have metal, glass, furniture, wall paper, carpets and pottery, but alas! almost no porcelain.

TRENTON, THE STAFFORDSHIRE OF AMERICA.

ITS POTTERIES, OLD AND NEW.

THE POTTERY INDUSTRY in Trenton had its actual beginning in 1852, when Messrs. Taylor & Speeler commenced the manufacture of yellow and Rockingham ware, at a plant situated on the corner of Southard St. and the Delaware and Raritan Canal. In 1853, Mr. William Young and Sons acquired this plant and later sold it to the Willets Manufacturing Co., its present owners.

In 1859 the Trenton China Company was incorporated, with their plant located in South Trenton on Third street. This plant was afterwards sold to the Maddock Pottery Company and is now known as the Lamberton Works. Two years after the establishment of the Trenton China Company, the Greenwood Pottery was organized under the style of Stephens, Tams and Company. They built their plant on the Delaware and Raritan Canal, south of State street. Until 1876 they made white granite ware. Since that time they have been making a specialty of vitrified translucent hotel china of superior quality.

The year 1863 marked a rapid growth in the pottery industry of Trenton; three potteries having been started in that year; the Glascow Pottery, on Carol street, by John Moses; the Etruria Pottery, on North Clinton avenue, by Messrs. Ploor, Ott and Booth; John Hart Brewer, the late president of the company entering the firm in 1865; and the Empire Pottery on North Clinton avenue, next to the Etruria Pottery, by Messrs. Coxen and Thompson. It was at the Etruria Pottery where the Ott and Bloor "belleek" was made in 1882.

At the Centennial Exposition held in Philadelphia, 1876, was exhibited by Messrs. Ott and Bloor, the famous baseball vase modeled by Broome. The Etruria plant is now one of the potteries of the Cook Pottery Company. The Empire Pottery was sold in 1883 to Messrs. Alpaugh and Magowan who in 1892 sold out to the Trenton Potteries Company.

In 1868 the Mercer Pottery Company, 36 Muirhead avenue, was organized by Mr. Thompson; Mr. James Mores, its present owner, taking it in 1872. They manufactured a line of "CC" and white granite ware. In the next year the New Jersey Pottery Company was organized by Elias Cook and others, their plant being right next to the Mercer Pottery. The name of the pottery has been changed by its present owner, Mr. John Maddock, to the Coalport Works.

In 1878 the International Pottery was established by Messrs. Carr and Clarke. This plant was purchased in 1879 by Messrs. William Burgess and John A. Campbell. In the same year the Burroughs and Montford Company commenced business; building their pottery on North Clinton avenue and calling their plant the Eagle Pottery. The Prospect Hill Pottery was erected in 1880 by Messrs. Dale and Davis. This pottery is situated on Prospect street just past the Reading Railroad. It now forms one of the plants of the Cook Pottery Company. One year later the Crescent Pottery was built on Allen street by Messrs. Cook and Hancock. This pottery is now owned by the Trenton Potteries Company.

Trenton at the present time makes the most varied line of pottery wares of any city in the United States, making full lines of dinner and toilet wares in "CC," white granite, semi-porcelain and vitrified opaque porcelain as well as in bone china. It also has the most extensive potteries, manufacturing all lines of sanitary ware, including vitreous china, closets, lavatories, etc.; also solid porcelain bath tubs, shower baths, laundry trays, sinks, lavatories, etc. There is also a number of potteries engaged in the manufacture of tile; plain white tiles, decorated wall tiles, and also vitreous floor tiles. Besides this, Trenton is the greatest center for the manufacture of electrical porcelain in this country, making most of the very large and intricate porcelain insulators used in high current electrical work. Door knobs and hardware porcelain are also made.

At present Trenton has in operation the following potteries:

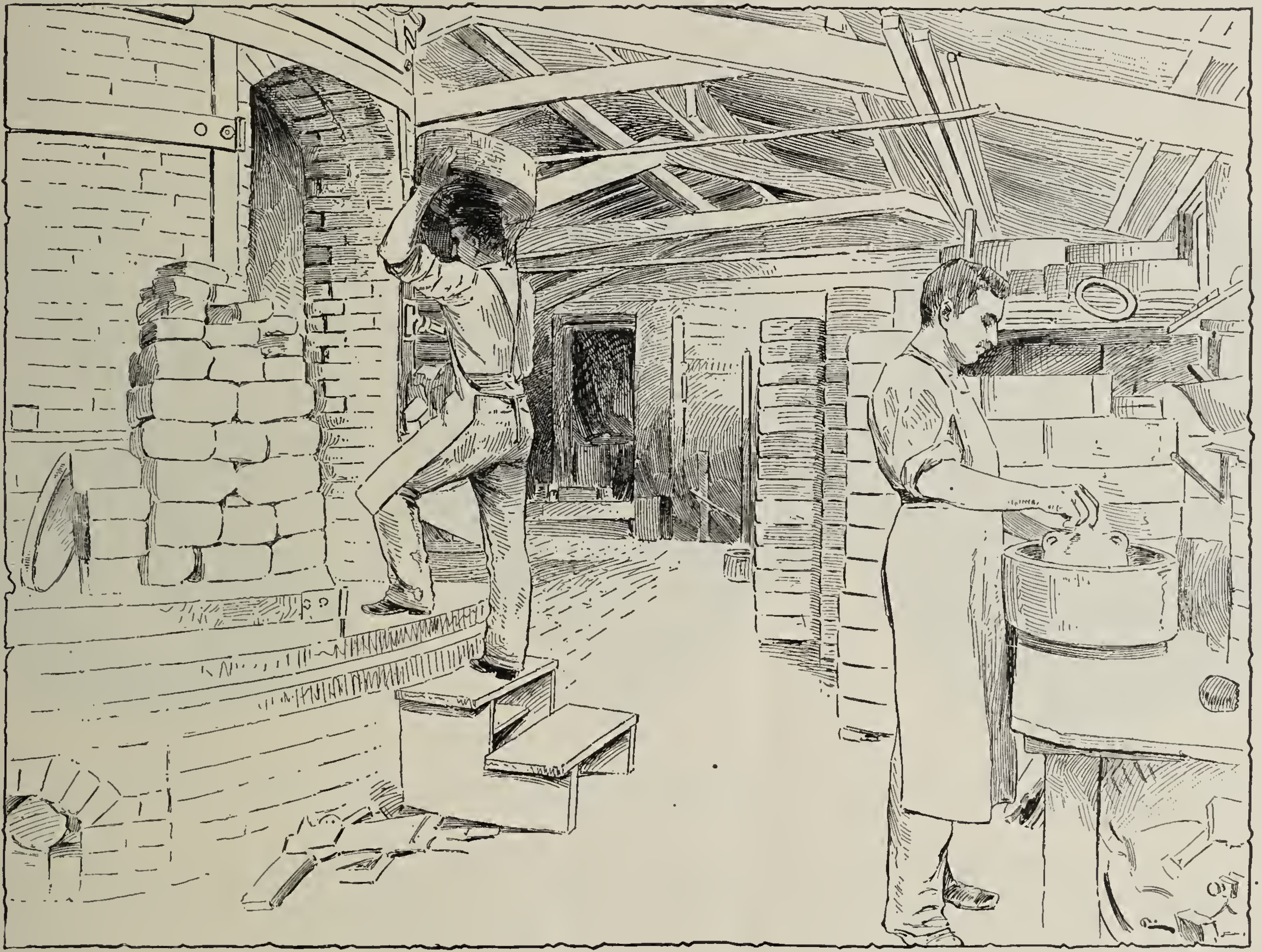
The Cook Pottery Company, operating three plants, the main office being at the Etruria Works, on the corner of North Clinton avenue and Ott street (formerly Ott and Brewer's pottery). They also operate the East Trenton Pottery, on Mulberry street, and the Prospect Hill Pottery (formerly Dale and Davis). Mr. Charles Howell Cook is the president and general manager of the company. The Cook Pottery Company manufacturers "CC," white granite, and semi-porcelain dinner and toilet ware in plain white and decorations. It also makes a line of decorated pedestals, vases, etc. At the potters' convention held at Washington, D. C., 1905, Mr. Cook presented to each one of the invited guests at the banquet a handsome plate containing an underglaze print in brown of President Roosevelt.

THE IMPERIAL PORCELAIN WORKS.

Among the recent potteries having won national reputation is the Imperial Porcelain Works, located at the corner of Klagg avenue and Mulberry street. This pottery was organized in 1891 by Fredric A. Duggan and Benjamin D. Dinsmore. Though this plant is of recent organization, it is the first one of its kind in America, manufacturing high-grade electrical porcelain for electrical and other purposes. It has six kilns and employs on an average one hundred and fifty to one hundred and seventy-five men.

The Greenwood Pottery Company, with Mr. James Tams president and practical potter; Mr. James P. Stephens, secretary and Mr. Charles Van Sycle, treasurer, is running three plants, aggregating twenty-seven kilns, on hotel china dinner ware, which is being marketed in plain white and also in over and under glaze decorations. The superior quality of the ware made by the Greenwood Pottery Company is recognized by the hotel and restaurant keepers throughout the country, on account of the small amount of breakage in putting their plates through the patent dish washing machines that are in general use, and which are so hard on all forms of table ware.

The Trenton Potteries Company, the largest manufacturers of sanitary porcelain in the world, was organized in 1892, with Mr. Daniel K. Bayne, president; Mr. William S. Hancock, vice-president, and Mr. Frank A. Magowan, as general manager. Mr. Magowan was succeeded by Mr. John A. Campbell. Mr. Charles E. Lawton is the present secretary and treasurer. This company acquired the plants of the Delaware Pottery, on Prospect street, from Messrs. Richards, Hughes and James Oliphant; the Crescent Pottery, located on Allen street, from Messrs. Chas. Howell Cook and William S. Hancock; the Enterprise Pottery, located in East Trenton, from Messrs. Charles H. Skirm, William H. Umbelbee and J. Brian; the Empire Pottery, located on North Clinton, corner Ott street, (where the main office of the company is located) from Messrs. Alpaugh and Magowan, the Equitable Pottery, in South Trenton, on Talor street on the Delaware and Raritan Canal, from Messrs. Jonathan Coxen, Andrew Cochran; and John Leuckel. The company has since built the Ideal Pottery adjacent to their Empire plant. It is at the new plant where the Ideal solid porcelain bath tubs, lavatories, etc., are made. The quality of the ware made by this company may be estimated from the fact that it has merited the highest awards every time exhibited, receiving gold medals at the Trans-Mississippi Exposition, 1898; the International Export Exposition at Philadelphia, in 1899; the Exposition Unversalle, at Paris, 1900; the Pan-American Exposition, at Buffalo, 1901, and the Louisana Purchase Exposition in 1904.



A Typical Pottery Scene—Filling Saggers and Placing Same in Kiln.

The Mercer Pottery Company, situated in East Trenton, at 39 Muirhead avenue, has the distinction of being the first pottery in America to manufacture porcelain. At the Centennial Exposition, in 1876, this pottery made an excellent exhibit of its porcelain and was awarded a gold medal. The same standard of excellence has been maintained. In the year 1876 they substituted the manufacture of porcelain for "CC" ware. The stronghold of the English porcelain goods has always been under-glaze border patterns and for many years it was claimed that they could not be produced successfully in this country. About ten years ago the Mercer Pottery went into this line and proved conclusively by their product of under-glaze dinner ware that this ware can be made here in spite of all opposing prejudice. It is now fully conceded by the trade that the Mercer Potteries' under-glaze product is fully as good as the imported article and much more available.

The Star Porcelain Works, on Muirhead avenue, was established in 1899, with Thomas H. McKenzee, president; Herbert Sinclair, secretary and manager, and Dr. Charles P. Britton, treasurer. This company manufactures exclusively electrical porcelain. Their large and intricate pieces used in high current insulation have won for them an enviable reputation for so recent comers into this field.

The Lamberton Works, on Third street, in South Trenton, was incorporated fourteen years ago, under the laws of New Jersey, with Mr. Charles P. May, president; Mr. A. M. Maddock, treasurer; Mr. E. D. Anderson, secretary, and Mr. Mores Callear, superintendent.

They manufacture exclusively rolled-edge china for the better hotels. This ware is made on the French principle there being no pin marks on the back to mar its beauty. It is the only ware of its kind made in this country. The shapes and designs are the company's own exclusive property, being produced by skilled artists. Most of the designs are patented. Many of the best hotels and clubs in the country use Lamberton china; that being the only class of trade catered to.

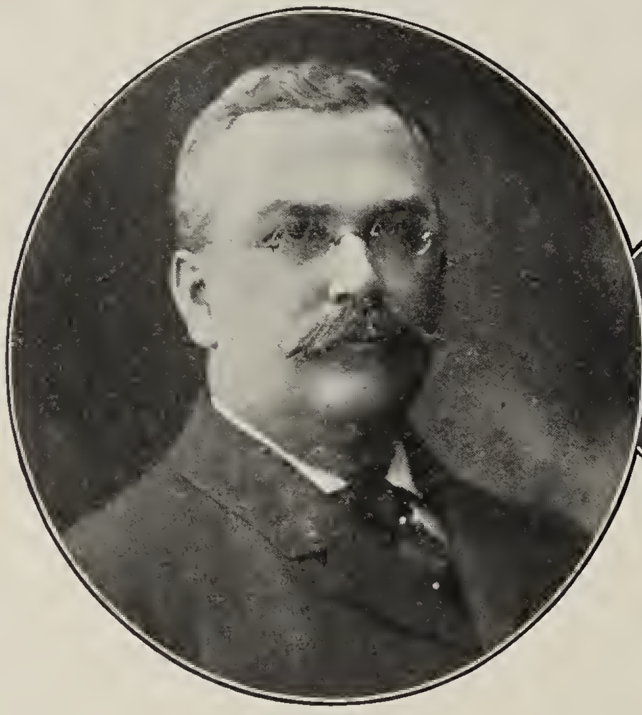
Thomas Maddock and Sons, on Carol street, near Perry, was the first pottery in America to manufacture sanitary ware having been organized by Thomas Maddock, who made the first plumbers' sanitary ware in 1870. This company is still in operation, being run by Messrs. Archibald, Charles and Harry Maddock.

Among the largest potteries of Trenton is the Willets Manufacturing Company, where sanitary ware, white granite, "CC" ware and also a line of "belleek" china is made. The present proprietors, Messrs. Joseph, Daniel and Edmund R. Willets, three brothers, secured the business in 1879; this factory being the one erected by William Young and Sons in 1853.

The Anchor Pottery Company, located in East Trenton, on New York avenue, was formerly Joseph H. Mores' pottery. They make white granite dinner and hotel ware. This plant is unique in the fact that they grind and prepare their own flint and feldspar.

The Trenton Fire Clay and Porcelain Works, on Third and Davis streets, South Trenton, is controlled by the J. L. Mott Iron Works, of New York, and operated by O. O., Wm. J. J., and R. K. Bowman. This plant makes exclusively heavy sanitary ware, such as Imperial solid porcelain bath tubs, lavatories, laundry trays, sinks, etc. The Mott Company has completed very recently extensive iron and brass foundries, machine shop, etc., adjacent to the pottery. This plant occupies the site of the former "Trenton Terra Cotta Company."

John Maddock and Sons, the Coalport Pottery, on Muirhead avenue, next to the Mercer Pottery, manufactures a line of vitrified china, sanitary and plumbers' earthenware and specialties. It was founded January 1, 1895. Mr. John Maddock, the senior member of the firm, is the eldest son of the late Thomas Maddock and has held a prominent place in the pottery industry of Trenton for a number of years, having always been active in the adjustment of schedules of wages and other labor questions.



JOHN A CAMPBELL,
General Manager Trenton Potteries Company.

ALFRED LAWSHE,
Managing Director and Treas. of Trent Tile Co., Trenton, N. J.

D. K. PAYNE,
President The Trenton Potteries Co., Trenton, N. J.

The International Pottery Company, on the Canal, south of Front street, was purchased in 1879, by Messrs. William Burgess and John A. Campbell and is now owned by Mr. Moon and managed by Mr. Ambrose Dale. They make white granite and semi-porcelain dinner and toilet ware, both plain white and decorated. Their under-glaze decorations have won them widespread reputation.

The Monument Pottery is located on Ingram avenue. This pottery is owned by the L. Wolfe Manufacturing Company, of Chicago, and is under the management of Mr. Charles Williams and Mr. William Gowdy. They make exclusively sanitary ware, such as solid porcelain tubs, lavatories, sinks, etc.

The Providential Tile Company, on Enterprise avenue, in East Trenton, makes wall tile, Boston decorated mantle and other ornamental tiles.

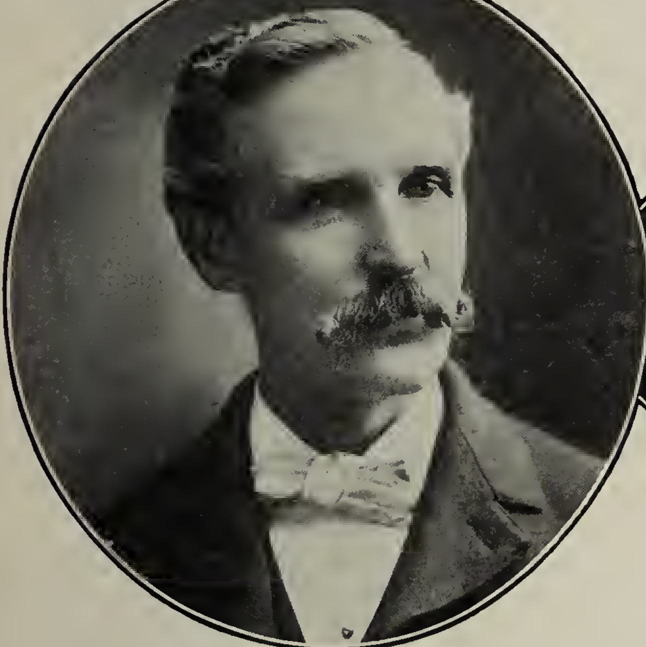
The Robertson Art Tile Works at Morrisville, Pa., is just across the river from Trenton. Arthur B. Frost and Evertt Townsend superintend the work. They make a line of side wall and floor tlie.

The Trenton Tile Company, organized 1882, and situated on Klagg avenue, in East Trenton, is Trenton's largest tile manufacturing company, employing over 500 hands. They supply tiles in all markets of the world, making tile for "everywhere and anywhere." Specifically, "Della Robbia" glazed tile, in choice and rich colorings; enameled tile, plain and embossed, in a large and varied line of plain and onyx colors; vitreous aseptic floor tile, in all sizes, shapes and colors; ceramic mosaic for floors, all shapes, sizes and colors; sanitary wall tile, including bases, caps, plinth blocks, door and window trim, etc., in fact all the integral parts required for wall and wainscoting; hand painted tiles in all classes of decoration known to the ceramic art, including Palissy and posterish effects; glazed and unglazed ceramic mosaics for wall and fireplace; dull crystalline glazed tile in an artistic line of colors; designs and tiles in L'Art Nouveau by a student of Prof. S. Bing, Paris, France, the founder of L'Art Nouveau movement; hand-wrought antique tile, a distinctive specialty. They make all classes of tile and ceramic mosaics known to the tilewright.

Recently Mr. Charles P. Lawshe, the technical manager of the Trent Tile Company, determined to undertake the production of a crystal glaze and in a short time concluded from the results of his laboratory experiments that a crystal glaze could be produced on an earthenware body, and on a flat piece of pottery like tile. In so assuming he was in direct contradiction and in opposition to the claims of the most eminent technical managers of the world's pottery industry as they had claimed that crystal glazes could not be produced except on a porcelain body. In taking this position it required courage and an absolute faith in his ability and thorough knowledge of his art. Mr. Lawshe's efforts in the offstart were confined exclusively to the obtaining of a glaze which would entirely cover a tile or piece of pottery with a mass of crystals, this result being obtained, the several oxides, carbonates, sulphates and oxalates of the various minerals were employed to give the color effect. The results secured are many colored crystal glazes of great beauty and richness. The Trent Tile Company has exhibited these crystal glazes to the leading architects of the United States and is now receiving and accepting orders for them. They have representatives in Great Britain, France, Germany, Australia, New Zealand, South Africa, India, South America and Russia.

The following potteries manufacture exclusively plumbers' sanitary earthenware:

The Acme Sanitary Pottery Company, on May street; the Belmark Pottery Company, on New York avenue; the Brian Pottery Company, near Inter-State Fair Grounds; the Elite Pottery Company; the Fidelity Pottery Company on Prince street; the Keystone Pottery Company, on New York and Olden avenue; the C. B. Walton Company, and the Economy Pottery, in South Trenton.



MR. JOHN MADDOCK,
of John Maddock and Sons, Tronton, N. J.

HERBERT SINCLAIR,
Sec. and Mgr. Star Porcelain Works, Trenton.

DR. CHARLES P. BRITTON,
Treasurer Star Porcelain Works, Trenton.

The Trenton Porcelain Works, on Mead street, make electrical porcelain and specialties. Mr. Warren Kimble has a pottery on Prospect street, on the P. & R. R., where he makes door knobs and other hardware porcelain. The Trenton Porcelain Works on Murray street make door knobs and electrical specialties.

The Ceramic Art Company, with Mr. Walter S. Lenox president and treasurer, and Mr. H. A. Brown, secretary, is located on Mead street, East Trenton. They manufacture exclusively a high grade of art pottery, including dinner services, in lone china, vases and ornamental pieces in eggshell "belleek." Their artistic shapes, exclusive patterns, together with the excellent quality of their product has lead such houses as Tiffany & Co., of New York; Baily Banks & Biddle, of Philadelphia, and others to make a special display of their ware and announce "Made by the Ceramic Art Works, of Trenton, N. J. Equal in every way to the finest productions made abroad," which has caused the writer to select this product and the processes of its manufacture for description in detail.

Some of the materials are prepared before reaching the pottery; but most of the ingredients come in their raw state and are calcined and ground at the pottery as the different bodies and glazes demand. All the earthy substances must be reduced to an impalpable powder and cleared from particles of iron and foreign matter before being used. The pulverized materials, mixed in proper proportions, are now ready for the "blungers," or vats, in which they are "blunged" in water, so as to form a uniform cream-like mass, called "slip," which now goes into the "mixing pans," is drawn off and after being sifted through fine silken lawn is ready for the "caster." These purely mechanical operations require the closest attention, as a fine quality of ware depends on the knowledge and care exercised in the mixing-room, the potter's laboratory.

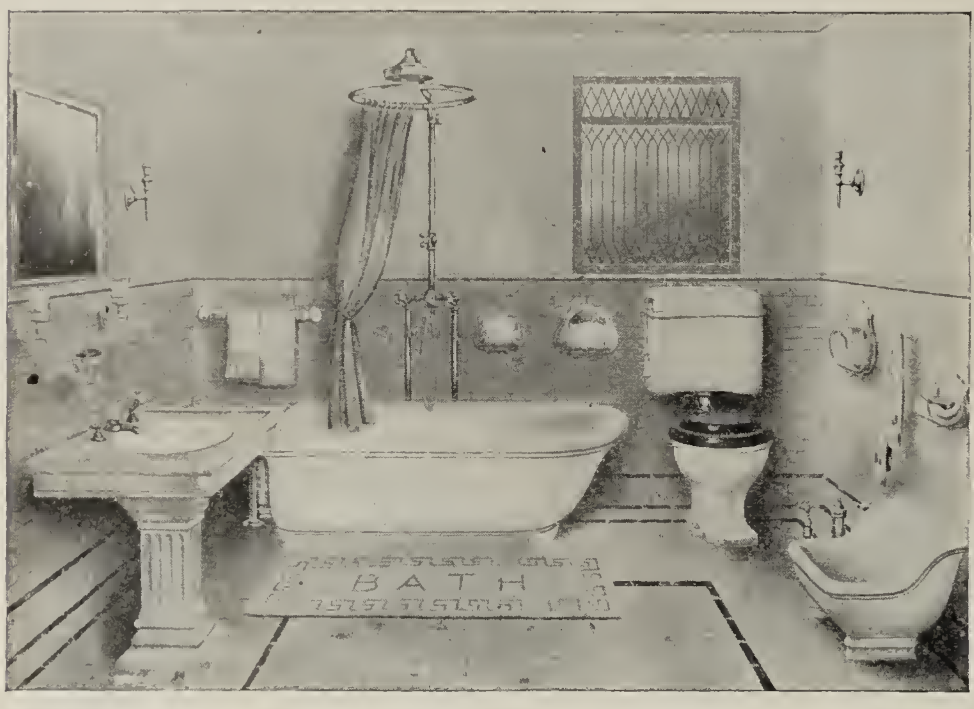
The next point of interest is the clay-shops, where all forms are modeled and cast. From the clay model a "block mould" in two exactly fitting portions is made of plaster of Paris and carefully preserved. From this case in turn, as many working molds are cast as may be required. Mold making and modeling demand not only knowledge, skill and time but the modeler must allow for shrinkage in drying and firing, and guard against the use of forms that will warp or sink in the fire. Handles, tops of vases, stands and bases are all modeled and cast separately, so that one piece may require several molds. Besides the molds used in casting it is necesary to make many devices, such as rings and stands, to hold certain forms in shape while undergoing the fire.

The caster binds together the two portions of the mold, sets it upon his wheel, which he gives a deft turn and pours in the slip. If the piece he is making is to be small and thin he leaves the slip in the mold but a moment, then quickly pours out all that has not adhered to it; a thicker article requires a proportionately longer time. The sponge-like plaster readily absorbs the water in the slip, leaving a shell of clay, which as it drys, shrinks away from the mold while it retains its shape. The mold containing the embryo ware is set in the drying room until the clay shell is hard enough to be handled. When sufficiently dry and firm, each piece of green ware is removed from the mold and set upon a wheel where the edges are trimmed and finished and the pieces cemented together by slip. The pieces are then further dried and taken to the kiln shed.

Placing and firing a kiln are very important though apparently simple operations; for on the watchfulness and experience of the fireman depends much of the success of the potter. The ware to be burned is placed for protection and convenience in fire-clay boxes, called saggers, in which it rests on sand or flint, many shapes requiring regular beds of this material. A strip of moist clay is then laid across the edge of the sagger and it is placed in the kiln close to the side, another set on top of the first, and so on to the crown of the kiln. The strips are to further protect the ware from the fumes and smoke. When the kiln is full the door is bricked up, plastered over with clay and the fire started.

When the kiln has been fired the proper length of time, it is allowed to cool and the ware, now biscuit, is removed. A transformation has taken place. The friable clay-colored articles are now beautifully white, firm translucid pieces of porcelain.

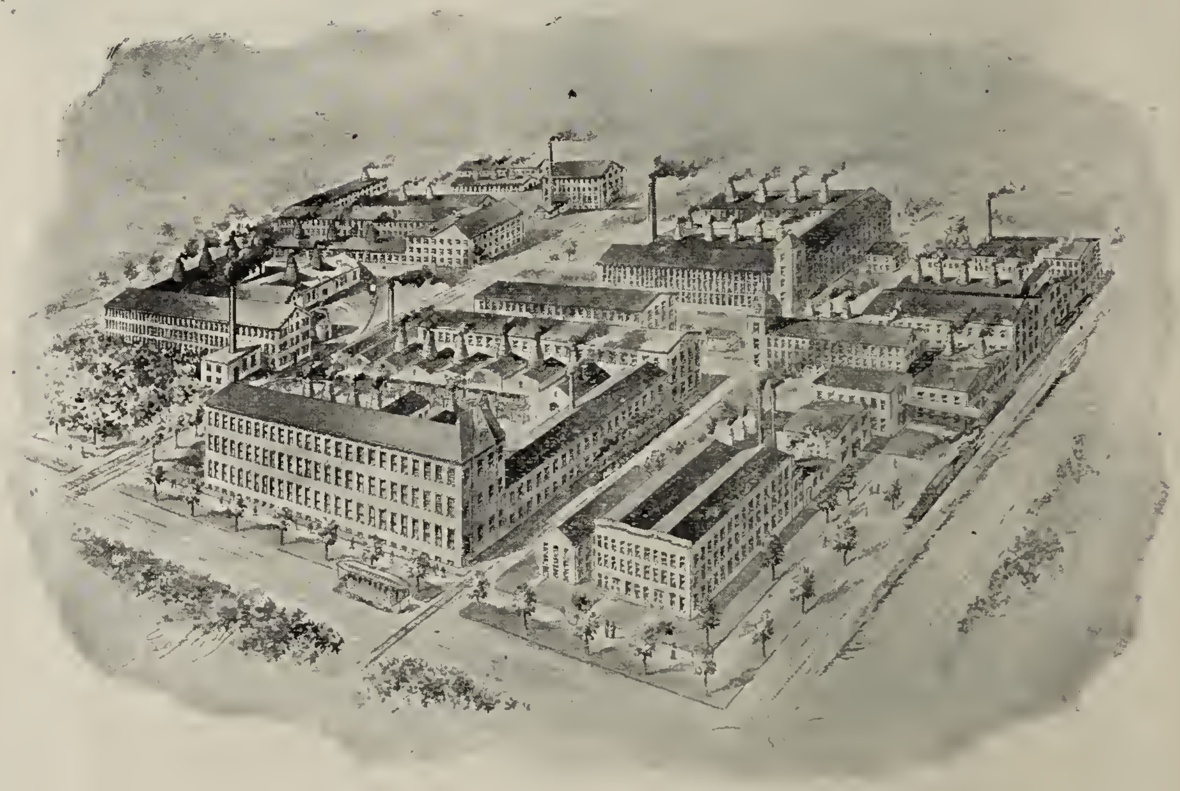
The biscuit now goes to the biscuit ware room, where it is carefully selected, each separate piece is rubbed with sand-stone, polished with sand-paper and brushed until it is perfectly smooth and absolutely free from dust. It is then ready for the dipping room. The glaze is prepared with great care. Most of the ingredients in due proportion are mixed together and melted, forming a fritt, which is finely ground and mixed with the other necessary materials. All are now ground together in water until the mass forms a heavy, creamy liquid; into this solution the dipper plunges his ware, taking care to get the glaze evenly distributed on the piece. It is then set on the "rack" to dry, and carefully guarded from dust and foreign substances. When dry, the ware has a second burning in the glost kiln. Placing the glost kiln is a work of even more care than that of placing the biscuit. Each sagger must be washed with a special glaze, and pieces must not touch one another on the sides of the sagger. Flat pieces are set on fire-clay pins. Stilts are also used to keep certain articles apart, otherwise the ware is arranged as before. The degree of heat



Solid Porcelain Tub, Lavatory, Etc., Which Won First Prize at World's Fair.

Specimen Ceramic Art Pottery.

Loving Cup, Ceramic Art Pottery.



Plants of the Trenton Potteries Company.

required is tested by means of small clay rings put through little openings made for that purpose in the kiln walls. When the experienced fireman is satisfied with the condition of things inside, the warm work of drawing the kiln begins; the glowing coals are raked out of the fire holes and the hose is turned on. After the kiln has cooled, and the saggers are opened, the ware is critically examined and the perfect stored in their respective bins in the whiteware room.

The decoration of pottery and porcelain is an art of infinite restriction and uncertainties, but of never-failing fascination. The decorations are divided into two classes, under-glaze and over-glaze.

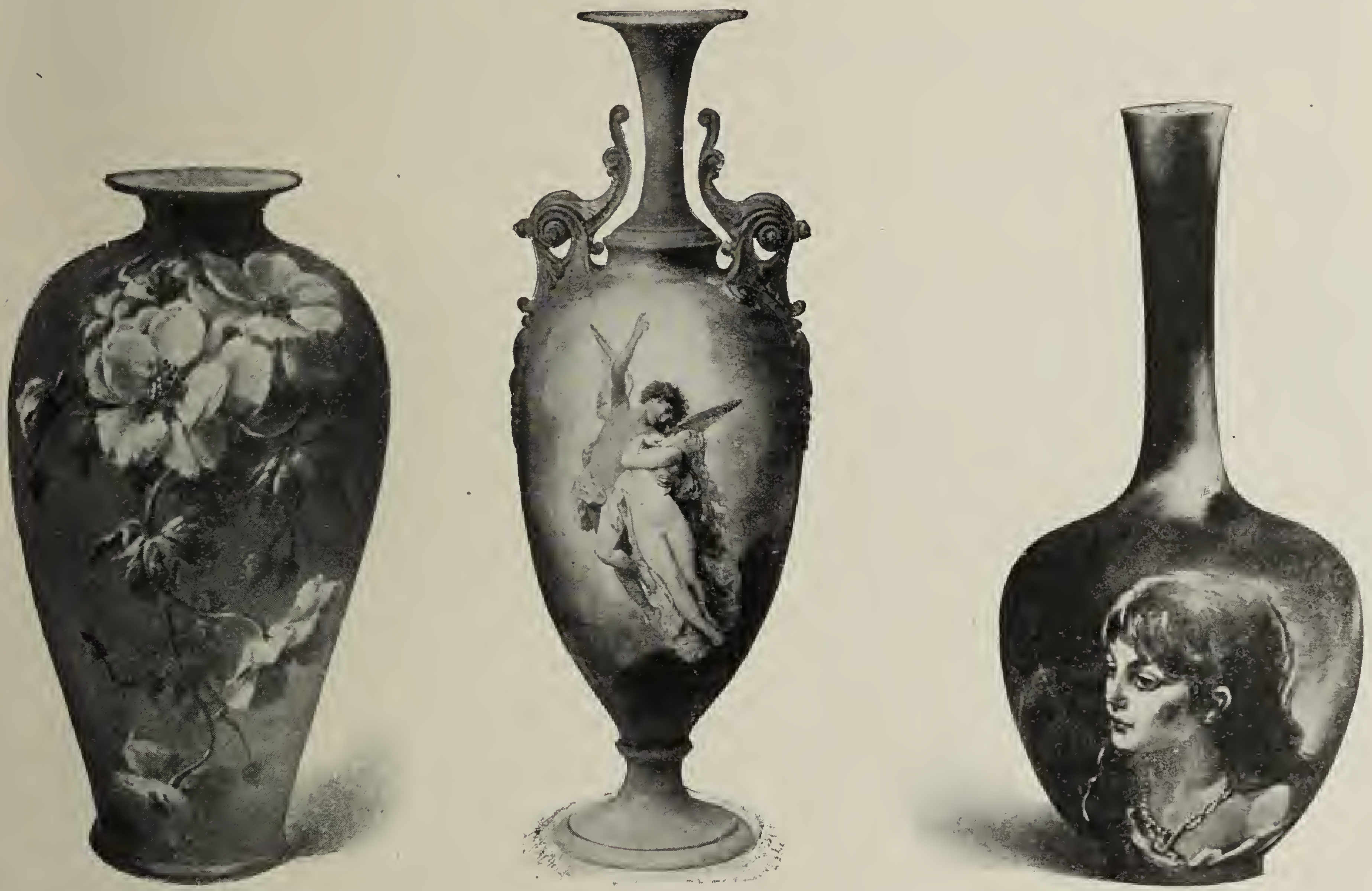
Under-glaze decoration is painted on either the green ware or biscuit, after which the piece is glazed and subjected to the glost fire; comparatively few colors will bear this hard fire, the principle ones sufficiently strong, being blue, brown and green. In another way, the color is finely ground, lawned, mixed with various oils and spirits and applied to the glaze. The piece is dried in the kiln for enamel colors and sent a second time into the glost fire, where the color penetrates the glaze, becoming part of it. Few pieces painted in this manner are completely satisfactory in one firing, so that every finished article has generally passed through four hard fires and two enamel fires—six times through the kiln; often more. The results, however, justify the labor, as the decoration, apart from its artistic possibilities, becomes a part of the object and is absolutely unharmed by friction or acids, and can be destroyed only by fracture.

Over-glaze decoration admits of greater variety in color and manipulation and is attended with less risk, although here also the greatest care must be exercised from grinding the color to the final burnishing. A kiln of different construction is required for firing, and the degree of heat and time of burning varies with different colors.

The successful combination of vitrifiable colors in a polychrome decoration depends not only on the artist's intuition but also on the china painter's knowledge of color chemistry. He is often obliged to resort to a method not unlike lithography of doing portions of his work, one at a time; if gold or raised paste enters the design he must always wait until the rest is fired before that is applied. The ceramic artist, more than any other, must, from the beginning of his efforts, see with the mind's eye his completed work, and with infinite patience await the result of the fiery trial. A more mechanical process of decoration is that of printing the design in color or gold and afterwards touching up with a pencil. This is a much quicker method than hand work and is often very effective.

Fashions in ceramic ornamentation come and go in popular favor, while the standard of excellence grows higher each year, as culture is more widely diffused. No producer of beautiful and useful things strives more earnestly than does the potter to win and deserve a name and fame from an appreciative public.

J. Homer Stover.


A Group of Art Pottery from the Kilns of the Ceramic Art Co., Trenton, N. J.

Good for Employe and Employer.

Editor Clay-Worker:

Enclosed you will find two dollars in payment of The Clay-Worker for another twelve months. Please accept my thanks for past favors. The Clay-Worker is always thankfully received at our brickyard, employes reading it as well as employer. The past season has been a good one for brick in this part of the country, we've had a good season for making brick in the open and have found plenty of sale for them. The other brick company located here has had a good season; sold all they made. We are now getting better prices for brick—$5.50 per thousand. Wishing you a happy New Year and plenty of success, I am, as ever,

Astoria, Ill., Dec. 31st, 1905. J. H. HORNER.

OFFICIAL ANNOUNCEMENT.

THE TWENTIETH NATIONAL CONVENTION TO BE HELD AT PHILADELPHIA, FEBRUARY 5TH TO 17TH, 1906.

The Sessions of the American Ceramic Society Will be Held Monday, Tuesday and Wednesday, the 5th, 6th and 7th.

The Sessions of the N. B. M. A., Will Begin Wednesday Afternoon, February 7th, and Continue Thursday and Friday, the 8th and 9th.

After a lapse of sixteen years, the National Brick Manufacturers' Association is again to meet in Philadelphia. The dates fixed are February 5th to 17th. Tickets will be good going from February 1st to February 7th, and returning up to and including February 21st, thus affording those who desire to do so an opportunity to enjoy side trips to other Eastern cities.

As in former years, the convention sessions will be arranged as follows: The American Ceramic Society will meet Monday and Tuesday, with a final session Wednesday forenoon. The N. B. M. A. sessions will begin Wednesday afternoon at 2:30 and the other sessions will be held in the forenoons of Thursday and Friday, thus leaving the afternoons of those days open to sightseeing, trips to the plants, and other points of interest. If the program can be completed on this schedule there will be no afternoon session Thursday or Friday. The National Paving Brick Manufacturers' Association will hold an Executive session Tuesday p. m.

The Convention Hall and Exhibition Room.

All sessions of these bodies will be held in the convention hall or parlors of the Continental Hotel, and the Local Committee on Entertainment will also have headquarters there. An Exhibition Room will also be provided in the hotel for the exhibition of models of machinery, light supplies, specimen brick, trade literature, etc. This space will be free to members under the following rules:

The exhibition room to be closed both to visitors and exhibitors during the sessions of the convention.

No overhanging or outhanging placards or signs will be permitted in any display, so insuring an unobstructed view of the entire exhibition hall.

The right is reserved by the committee having the matter in charge, to apportion space on arrival of exhibits, according to the needs of the occasion.

The placing of heavy machinery will be subject to the consent of the manager of the hotel.

Hotel Headquarters and Rates.

The Continental Hotel will be headquarters during the Convention: It is located at the corner of Ninth and Chestnut streets, and is a spacious and most excellently managed hostelry, having recently been refitted throughout. Delegates and those accompanying them will be entertained on the American plan at the minimum rate of $3.00 per day for each person, two or more in a room, parlors and bath extra. Those desiring special accommodations will be quoted rates on application. Those ordering reserves in advance of arrival, should invariably state date of intended arrival, character of accommodations desired and number in party.

Reduced Railroad Rates and How to Get Them.

Reduced railroad rates on the certificate plan, affording a two-thirds rate for the round trip, have been granted by the Trunk Line Association, and all other passenger associations have concurred, covering all the territory in the United States, east of Denver. Canadian lines have also concurred. To obtain the reduced rate, delegates, and those accompanying them, must pay full fare for the going trip and TAKE A PROPER CERTIFICATE for same from the ticket agent. This certificate, when properly vised, will entitle the purchaser to a return ticket at one-third the fare paid, making a two-thirds rate for the round trip. Those starting from small towns should make inquiry of local Ticket Agent a few days in advance to insure the receipt of proper certificate. If certificates are not taken, the reduced rates cannot be secured. As it takes some little time to make out the certificates, delegates should present themselves at the ticket office at least thirty minutes before the departure of trains. If through tickets cannot be procured at the starting point, local tickets should be purchased to the nearest point where such through ticket can be obtained, and there purchase through to Philadelphia, and a certificate from the ticket agent at the place where each purchase is made should be requested. The latter feature is imperative. No refund of fare can be expected because of failure of delegates to obtain certificates. Should any ticket agent be unable to furnish a certificate on the regular printed form, delegates should take a written receipt, setting forth the fact that certificate was asked for and could not be furnished, and stating the amount of fare paid, the name of the station where purchased and the names of the railroads over which purchaser is ticketed. Such receipt, bearing the agent's official stamp, will enable delegates to obtain the proper refund. Return tickets will be good until midnight of Wednesday, the 21st.

Delegates and those accompanying them from the West will be granted stop-over privileges at Washington and Baltimore, if on arrival, they will deposit their ticket with the Ticket Agent in the depot. There will be no charge for this and stops may be made either on the going or returning journey within the limit of the ticket.

The Annual Banquet.

An Associational Dinner will be served Wednesday at 8:00 p. m., in the banquet hall of the Continental Hotel. All delegates and guests, including the ladies, will participate in this function, which will be given under the auspices of the brick manufacturers of Philadelphia.

There will be other entertainments provided for the visitors, including a theater party for the ladies, of which further announcement will be made at the convention.

N. B. M. A. PROGRAM.

First Session, Wednesday 2:00 p. m., Feb. 7, 1906.

Enrollment of New Members and Roll Call.
Prayer by Rev. E. E. Burris.
Welcome to Philadelphia by His Honor, Mayor John Weaver.
Response, George M. Fiske, of Boston, Mass.
President's Annual Address, J. M. Blair, Cincinnati, Ohio.
Report of Treasurer, John W. Sibley, Birmingham, Ala.
Election and Installation of Officers, and Members of Standing Committees.
"The Signs of the Times,"
An Address by G. W. McNees, Kittanning, Pa.

Rules of Procedure.

All formal resolutions shall be presented in writing.

At the close of each essay or address an opportunity will be afforded for the full discussion of the subject under consideration.

No papers or essays not included in the regular program will be heard unless previously submitted to and approved by the Executive Committee.

ADDRESSES FOR THURSDAY'S AND FRIDAY'S SESSIONS.

QUESTIONS FOR GENERAL DISCUSSION.

"Application of Heat and Removing Vapor from Various Clay Wares;" By W. C. Mitchell, Edwardsville, Ill.

"The Permanent Improvement of City and Country Roadways;" By Charles Deckman, Cleveland, Ohio.

"The Application of Refractory Materials;" By A. J. Aubrey, St. Louis, Mo.

"The Business End of Brickmaking;" By G. M. Springer, Buffalo, N. Y.

"Brick the Universal Building Material;" By F. W. Fitzpatrick, Washington, D. C.

"Electric Power for Clay Plants from an Engineer's Point of View;" By Victor C. Vance, West Point, Iowa.

"Burning Drain Tile With Producer Gas in a Continuous Kiln;" By J. M. Powell, Brooklyn, Ind.

"Economy of Increased Production;" By Marion W. Blair, Chicago, Ill.

"Biography of Clays;" By Ross C. Purdy, Champaign, Ill.

"Drying Brick by Waste Heat from Up-Draft Kilns;" By George H. Clippert, Detroit, Mich.

"Value of Producer Gas to the Brick Industry;" By S. S. Wyer, Columbus, Ohio.

"The Rattler Process as a Safe Method of Disclosing the Permissible Absorption of Paving Brick;" By Prof. Edward Orton, Columbus, Ohio.

"Brickmaking on the Pacific Coast;" By E. O. Simons, Los Angeles, Cal.

QUESTIONS FOR GENERAL DISCUSSION.

"Does the Use of Waste Heat from Cooling Kilns Tend to Effect the Color of Brick?"

"How can we Brickmakers Reduce our Fuel Bills?"

"What Test would be the Best on Brick Used for Tunnel Work, such as the one Being Constructed in New York City for the Pennsylvania R. R. Company?"

"What is the Cause of Whitewash or Scum Appearing on Face Brick?" "How can it be Prevented?"

"In the Manufacture of Speckled Brick by the Dry Press Process, Where is the Best Place to Mix the Manganese—in the Dry Pan or with the Clay after it is Screened?"

"What is the Process of Making Fire Flashed Brick?"

"Can Fire Flashed Brick be Made in an Ordinary Up-Draft Kiln?"

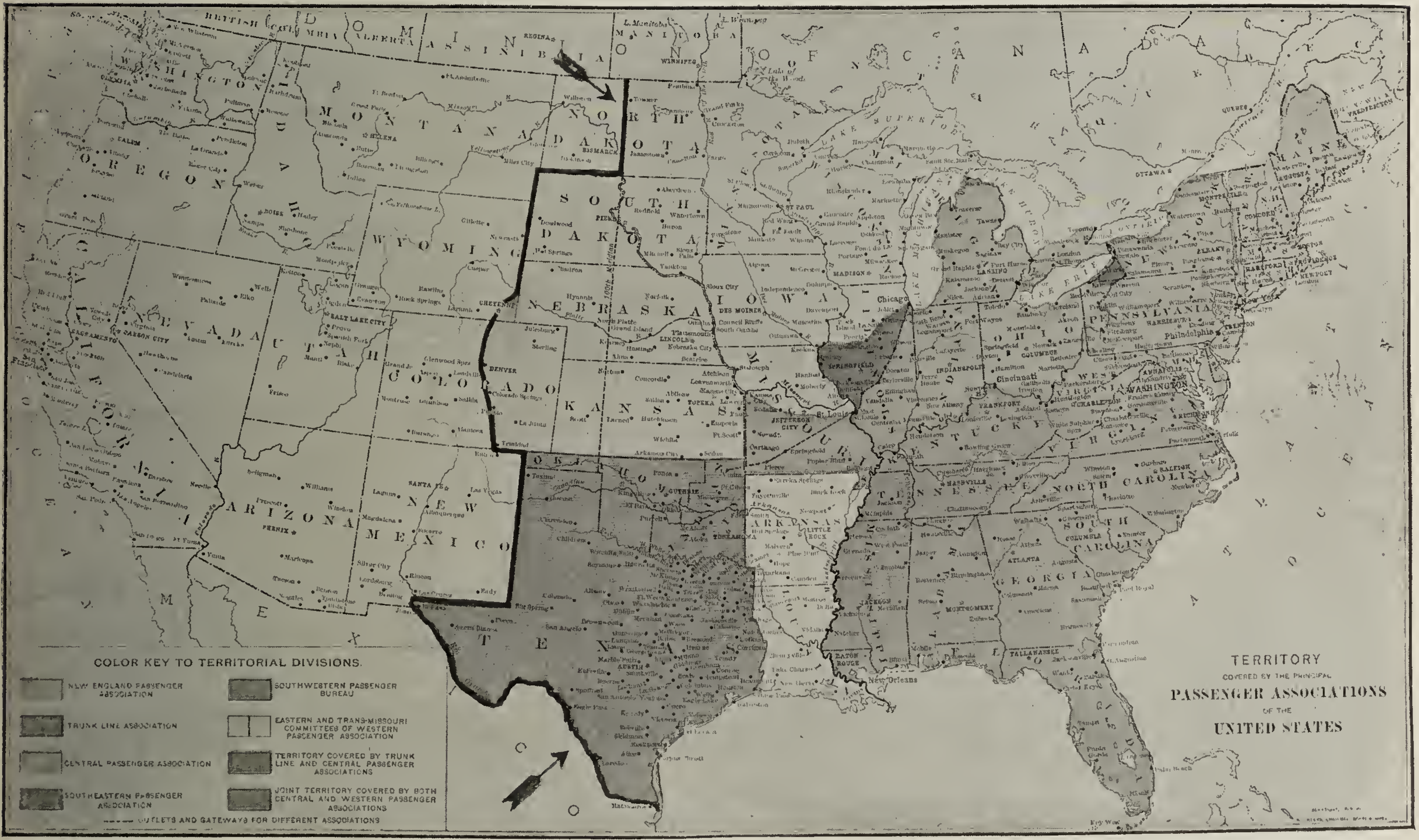
"What is a Fair Percentage of Cost for the Repairing and Maintenance of Down-Draft Kilns in the Burning of Vitrified Ware?"

"In the Laying of Brick Pavements, What is the Most Approved Manner of Putting in the Expansion Joint?"

"Is it Necessary to Provide for an Expansion Joint Across the Pavement as well as at the Sides? If so, at what Distance Apart, and What is the Best Material?"

Side Trip to Atlantic City and New York.

Arrangements have been made for a side trip to Atlantic City and New York, for which a special train will be furnished by the Philadelphia & Reading R. R. Leaving Philadelphia Saturday forenoon, the party will arrive at Atlantic City in an hour's time and repair to Hotel Rudolf which offers delegates and those accompanying them the same rate on American plan as the Continental, $3.00 per day. Those who do not wish to go on to New York will be afforded a special round trip rate, Philadelphia to Atlantic City and return. Those who do want to go on to New York will be made a special rate, Philadelphia to Atlantic City, Atlantic


TERRITORY
COVERED BY THE PRINCIPAL
PASSENGER ASSOCIATIONS
OF THE
UNITED STATES
COLOR KEY TO TERRITORIAL DIVISIONS.
NEW ENGLAND PASSENGER ASSOCIATION
TRUNK LINE ASSOCIATION
CENTRAL PASSENGER ASSOCIATION
SOUTHEASTERN PASSENGER ASSOCIATION
SOUTHWESTERN PASSENGER BUREAU
EASTERN AND TRANS-MISSOURI COMMITTEES OF WESTERN PASSENGER ASSOCIATION
TERRITORY COVERED BY TRUNK LINE AND CENTRAL PASSENGER ASSOCIATIONS
JOINT TERRITORY COVERED BY BOTH CENTRAL AND WESTERN PASSENGER ASSOCIATIONS
OUTLETS AND GATEWAYS FOR DIFFERENT ASSOCIATIONS

Reduced railroad rates to Philadelphia, fare and one-third on the certificate plan, have been granted by the Trunk Line Association. All other Associations having concurred, the rates are good from all points in the United States East of Denver, and from points on the Grand Trunk Railroad in Canada. The above map shows the territory covered. Members from points beyond the line shown should use their local mileage to the point East of the line from which they can buy through ticket, and there purchase through to Philadelphia. Tickets good going from February 1st to 7th, and Returning until February 21st.

City to New York direct, and return to Philadelphia direct, thus avoiding any unnecessary travel. Those reaching Philadelphia from New York via the Baltimore & Ohio, or Philadelphia & Reading R. R., will be privileged to return via Atlantic City.

Souvenir Badge of Membership.

A handsome and appropriate badge of membership will be presented to delegates and those accompanying them, and will prove a pleasing souvenir of the occasion. It is the ambition and hope of the brickmakers of Philadelphia to make the stay of the visitors both pleasant and profitable and special features will be provided for their entertainment including side trips to Baldwin Locomotive Works, League Island Navy Yard, the United States Mint, Zoological Gardens, Chambers Bros. Company's machinery plant, the Conkling-Armstrong Terra Cotta Company's works and the brick plants of Charles B. Murtha, the Equitable Brick Company, H. C. Carroll & Sons, which may be reached by trolley, and the paving brick plant of the McAvoy Vitrified Brick Company at Perkiomen.

In and About Philadelphia.

The attractions of Philadelphia are numerous and varied. There are within its gates many things of historic interest, the first of which is Independence Hall, where the visitor will find the old Liberty Bell, so dear to the heart of every American citizen. Then there is the United States Mint, the greatest money-making establishment on this continent, the splendid City Hall, costing many millions, the beautiful Masonic Temple, and many similar structures These, the League Island Navy Yard, and numerous other like industrial institutions, including the clayworking plants, of which there are many of peculiar interest to the members of the Association, will be open to wearers of the N. B. M. A. badge.

To those on pleasure bent, Philadelphia offers an endless variety of amusement; there are theaters galore, where the grave and gay alike may indulge their fancy, whether it may be for music, drama, or farce. While the public gardens, museums and art galleries and industrial schools and institutions of learning, afford an unlimited field for study. But Philadelphia is not alone attractive and desirable as a convention city by reason of the wealth of her own resources, but as well for her proximity to other great cities of the East. Atlantic City, the most famous of American winter resorts, is distant but an hour's ride; while Trenton, the great pottery center, is nearly as accessible, and New York, Baltimore and Washington are reached almost as quickly. There is no better train service in the world than now operates between Philadelphia and all these cities, fast trains every hour throughout the day being the rule. Hence, a series of side trips of exceptional interest may easily be arranged for. As in former years, these side trips will be made the second week, the first week being devoted to convention work proper.

All sessions of the convention are open to the public. Those who are interested directly or indirectly in clay work of any character are invited to join the Association and attend the convention. Members and their families or friends who may accompany them will be entitled to reduced railroad and hotel rates, and to participate in all the side trips, etc. Those desiring further information as to requisite of membership, etc., are requested to communicate with the Secretary at Indianapolis.

THE EXECUTIVE COMMITTEE.
J. M. Blair, President.
Theo. A. Randall, Secretary.

Hotel Rudolf, Atlantic City, N. J., Where the Delegates to the N. B. M. A. will Recreate.

A Hint to Those Who Will Attend the National Convention.

My Dear Mr. Secretary:

I am in receipt of the official announcement of the 20th Convention, to be held in Philadelphia, February 5th to 17th, 1906.

I desire to suggest to our members and delegates attending this Convention that they travel via the Baltimore and Ohio Railroad, and demand a stop-over privilege for Washington and Baltimore. By so doing they will have the opportunity of visiting the Nation's Capitol and Baltimore, where they can see what one short year has done in the rebuilding with brick.

My reason for making this suggestion is that the two cities above named are on the direct route of the Baltimore and

General View of J. H. Earley's Building Brick Plant.

Ohio to Philadelphia, and does not require round-about travel.

Looking forward to the renewal of hand-clasps with my friends of former conventions, and wishing you every success in the New Year, I beg to remain,

Very Respectfully,
ALBERT D. KLEIN, OF J.

Baltimore, Md., January 3rd, 1906.

Written for THE CLAY-WORKER.

PHILADELPHIA BRICKYARDS.

MOST OF THE brickyards of the Quaker City are within reach of the trolley lines, and the trolley system itself is such a thorough one that little time is consumed on the road. The Fifth street Fox Chase car takes one to a bunch of brickyards—or better perhaps—'twere said, a small colony in itself.

J. H. Earley, Nicetown Lane and Front street, may be truthfully said to possess the most complete and best equipped yard in the city, turning out building bricks of all kinds. Just a short walk and we find at Erie avenue, and G streets, the yard of the Y. J. Rose Brick Manufacturing Company, with Mr. Hoff in charge. This yard turns out the common red building bricks, five to six million per year.

The yard of John M. Kennedy, Jr., at Ontario and C. streets, turns out six million bricks yearly; red building bricks only.

S. K. Seitter & Son, Nicetown Lane and G streets, turning out common red building brick and red press brick at the rate of eight million per year, have occupied their present site for twenty-two years.

The yard of Joseph L. Siner, which was completely destroyed by fire, occupied the old site, on Harrowgate Lane above Old Front, and the void made by its destruction was further accelerated by the death of Mr. Siner, which followed closely afterward.

The yard of T. B. McAvoy & Son is right here with these brickyards; in fact one reaches this yard first, at Kensington avenue and Nicetown Lane, on the way to the others. Did one ever hear of a McAvoy being idle? Nay, nay. An ambitious, energetic family, and all of them, making bricks. This particular yard is turning out eight million bricks per year, and has the record of never losing a day all through the past summer.

Patrick Kelly and Son, at Olney avenue and Nicetown road, make common red building bricks, but how they manage to do so, in the summer time, with all the growing vegetables and fruit around, and with the dust of bricks in their throat, is a question. The thirst must be so keen, and the fruit so tempting.

Just across and beyond, is the Tansey brickyard, with Mr. J. C. Dobbs in charge. They are turning out one million rough red building bricks per year, and have occupied their present site for thirty-five years.

Boarding the South Twelfth street car, we exchange out Passyunk avenue, so reaching another group of yards. The first of them is Murrill C. Dobbins' yard, Twenty-third and Passyunk avenue. Mr. Atherholt, the superintendent, receives the visitor, in his genial way, and kindly answers questions. They make common red building brick and press brick, but are not necessarily rushed at present.

On a few steps further one arrives at the Lenten Brick Company, to be greeted by Mr. Paschall, whose experience in most things is wide and varied. They are busy here, especially just now, having improved their plant, enlarged their sheds, and moved the office. Hard red bricks to the

A Glimpse of Webster & Keyser's Plant, Mr. Keyser to the Left.

number of fifteen million, is their usual output per year. Further on, at twenty-fifth and Passyunk avenue is the Philadelphia Brick Company, an energetic yard under the energetic management of Mr. Major, turning out from twelve to fifteen million bricks per year. They had some large operations this year, some of them requiring from two to three million hard red bricks each. Across the road is the brick yard of Jarden Brick Company.

The Philadelphia brick yards seem to run in groups. Let us board the South Nineteenth street car on Walnut street, and exchange out Dickinson street. First on the list is the yard of McAvoy & McMichael, Twenty-seventh and Dickinson. McAvoy and Morris, Thirty-first and Dickinson. Webster and Keyser, Thirtieth and Tasker, M. Gaynor, Thirtieth and Morris, the estate of Samuel Huhn, whose yard is at Thirty-third and Dickinson. Taking a backward step, one sees the yard of Chas. A. Young, Twenty-fourth and McKean. All of these yards are full up with work, just as much as they can do.

The last group of yards is reached by the Angora car, or Sixtieth and Pine street car, on Walnut street. One arrives first at the yard of Wm. Conway, Fifty-eighth and Walnut. This yard is always busy always turning out bricks and always making money, naturally.

The Equitable Brick Company, Sixtieth and Pine streets, with their trim yard, and cozy looking office, looks its prosperity. The property has increased five-fold since their purchase of it. One never need ask if they are busy—one glance at the yard is sufficient.

John Hanarty & Son, have their yard at Fifty-eighth and South streets, three blocks walking distance from Sixtieth and Pine. One is repaid for the awkwardness in getting there, by the greeting extended. Do not select a muddy day for the streets surrounding are being torn out, cut away and made into piles of dirt that threaten the comfort of the pedestrian.

Boarding the car here at Fifty-eighth street, one turns to Sixty-fifth and Woodland avenue, the yard of T. H. Gesner & Son. They are always kept occupied with the local building operations, the "good old business" as Mr. Gesner terms it.

Carroll Brothers, (58th and Girard avenue) are just finishing up their orders before the real winter weather sets in to interfere, and they are glad of it they said. Hard red building brick for surrounding building operations has kept them busy, their gang of men numbering more than fifty makes a fine exhibition of strength, energy and success.

William Kelley, North Philadelphia yard, Second and Bristol street, covers over forty-six acres of ground and the yard is entirely under cover. Twelve months out of the year, this yard is in operation. All variety of building bricks, 20,000,000 per year sounds good, does it not?

Byrne Bros. yard, Twenty-seventh and Somerset, may be reached by the car on Walnut street, Tioga, by way of

A Group of Employes at McAvoy's Vitrified Brick Plant, Perkiomen.

Twenty-second. Mr. Byrne volunteers all necessary information with a good will, telling us they make all kinds of red brick—hard, salmon, and stretcher, turning out ten million or more a year. The Lehigh Construction Company alone requiring four million bricks.

Boarding the Sixteenth street car, and running up as far as Butler, one is confronted by the yard of D. C. Murtha, formerly of Murtha & Early. Mr. Murtha reports business better than it has been for years—brick are bringing higher prices up town Their yard turns out twenty-five million bricks a year and in the busy season, one hundred thousand per day. With a contract for five million hard building bricks which one places at the head of his list of contracts, we realize that the yard is not idle.

The Cyrus Borgner Company, 234 North Twenty-third street, turns out fire-clay, fire retorts, firebrick, anything in fact that can be made from fire-clay, to the tune of eleven million five hundred thousand a year.

Plant and Workmen of the Equitable Brick Co.

Among the terra cotta manufacturers, Conkling & Armstrong Manufacturing Co., Wissahickon ave. and Juniata can be reached by trolley or train to Tioga, and is worth any one's while to visit it. Their capacity is 8,000 tons per year, and they are working full most of the time. The plant and quality of work, are continually receiving improvements. The demand for glazed and dull enameled work is increasing constantly. Much of this is in various colors.

One principal contract on which they are working at present, is the New Marlborough Hotel, Atlantic City. It is made of green and two shades of yellow glazed terra cotta. The building is to be one of the most unique in the country—built of reinforced concrete system for columns, floors and roofs the outer walls are built up of hollow terra cotta blocks cemented on the outside, terra cotta, being the trimmings of the building. The ornamentation of this work is most appropriate to the locality, made up generally of sea forms, large dolphins, turtles, shells, lobsters, crabs, and seemingly every imaginable sea creature.

A Portion of the Works of the Philadelphia Brick Co.

Kiln Shed at Murrell Dobbins' Plant.

A Glimpse of Carroll Bros.' Yard.

Among their other contracts are the Engineers' Building, New York, church at Richmond, Virginia, and several churches in Philadelphia. The prospect altogether for 1906 seems bright and full of prosperity.

O. W. Ketcham, report their prospects for 1906 better even than those of 1905, which, was the finest year they ever had. Plenty of work in crysalis form, which will develop at an early date. Their office is in the Master Builders' Exchange, 18 South Seventh street.

William Galloway's Terra Cotta Works at 3216 Walnut street report good year in prospect. They are shipping to Altoona, ornamental terra cotta for two churches, opera house and hotel. Also ornamental terra cotta for the new Cape May Hotel, built by Pittsburg capitalists.

Geo. Carnell brick machine people, 1819-23 North Fifth street report the opening for 1906 much better than that of 1905, with many early inquiries and shipments of brick machines through New York State, and the South.

Chambers Bros. Co., 52nd and Media streets, report very good prospects for 1906. They are shipping brick machinery West and South, but mostly West, as far as the central part of Missouri and surrounding country.

This has been an exceptional year in the amount of money spent on building operation as well as in the number of same.

Nineteen hundred and two was considered a banner year for Philadelphia, thirty million dollars being spent on building operations. This year or properly speaking, last year, 1905, outclassed any previous year in number of building operations and also in actual capital spent. 8243 two story dwellings were erected, at a cost of $16,486,000; 974 three story dwellings, at a cost of $3,701,200; 107 four story dwellings, at a cost of $745,000; 31 office buildings; 168 stables; warehouses, factories, breweries, foundries and shops, churches, school-houses, etc., and miscellaneous buildings to the number of 9,880 building operations, at a total estimated cost of $29,506,138. Besides these 9,880 new buildings there were 2409 alterations and repairs, at an estimate cost of $3,613,500. Therefore, the amount of capital invested in building operations, in Philadelphia in 1905, was $33,119,638. These figures total up a sum beyond the comprehension of we ordinary mortals. We can all of us, however, understand and appreciate the fact that it means an immense investment in building operations, in which the brick, tile and terra cotta manufacturers have played a very important part, a "leading part," we may say. The coming year bids fair to be fully as good, so far as volume of trade is concerned.

M. E. LOCKINGTON.

THE PLAGUE OF WORDS.

President Roosevelt's warning against excessive letter writing in the government service is timely and should be heeded. No one who studies the methods even of private business can fail to be impressed with the tendency to excessive correspondence. In the government service, of course, any such tendency is exaggerated. It falls in with the temper of the bureaucrat, and goes along with the excessive printing of documents and an exaggeration by officials of the importance of the details of their own business.

We hope the President will be a restraining influence on the flood of words both in correspondence and in books, but we fear the times are against him. They offer fatal facilities for verbal exuberance. Books are published to-day in vast numbers, less because authors have anything to say than because printing is easy and cheap and the presses have to be kept at work. So, too, the typewriter click out folio after folio in public offices, not because there is any real reason for that amount of writing, but because the machinery for producing it is at hand. It is an old saying that traffic grows with the facilities for handling traffic, and so words multiply with the facilities for getting them recorded. When all letters had to be written laboriously in long hand they were confined somewhere within the realm of limited good. At least useless copies of papers merely incidental to pending matters were not made and transmitted in the mere spirit of red tape. Now it is so easy to have all sorts of things, important and unimportant, clicked off that the bureaucrat cannot resist the temptation. But he is not the only victim of it. Probably every lawyer's office to-day produces more documents in proportion of the actual business transacted than ever before. The courts complain that they are overwhelmed with voluminous records on the appeal of cases of no more importance than those which courts of former days considered with a record of a few brief pages before them.

The stenographer, the typewriter and the printing press are invaluable agents of civilization, but they have their drawbacks. They have inundated us with a plague of words, and we wish that curtailment in the government service could be but the beginning of reform.—*New York Tribune.*

Experience is a great whetstone for the wits, but it is frequently rather hard on enthusiasm.

Clay Bank at McAvoy's Perkiomen Plant.

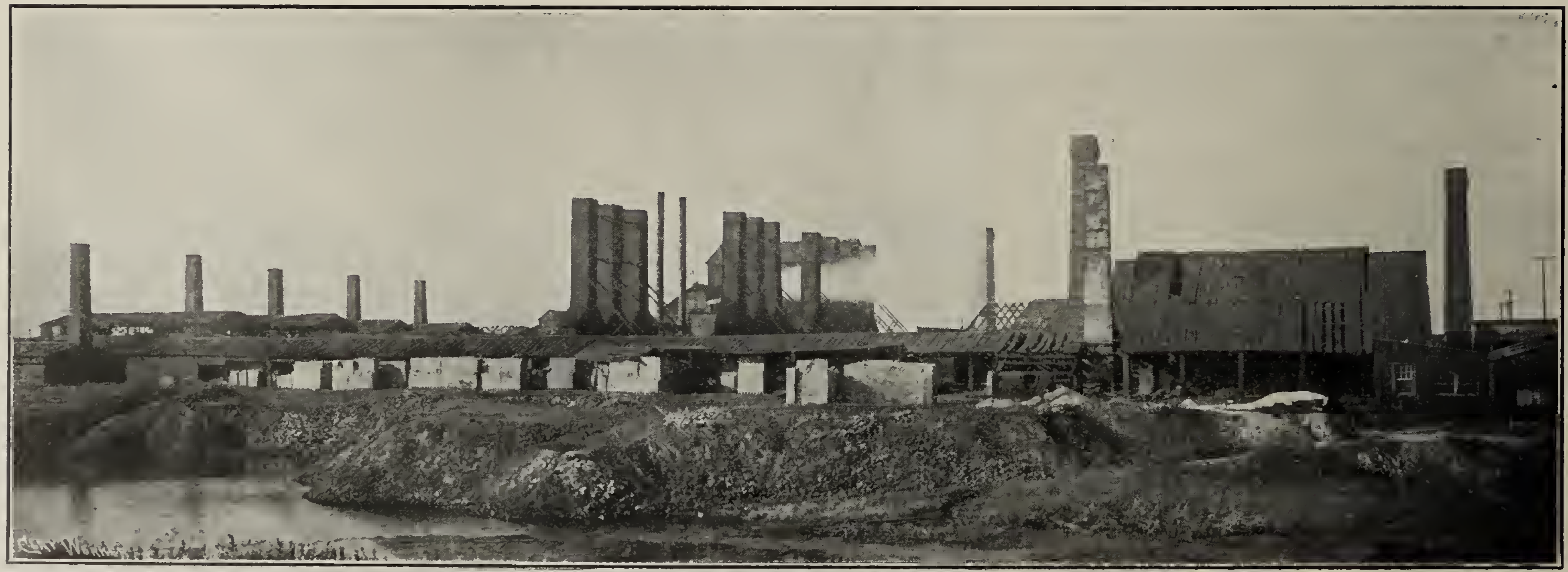
McAvoy's Vitrified Brick Plant at Perkiomen.

Plant of the Lenton Brick Co.

Philadelphia Brick Plants.

Plant of the Y. J. Rose Brick Manufacturing Co.

S. K. Seitter & Son's Brick Plant.



Works of Jarden Brick Co.

SIGNIFICANT FACTS.

The St. Louis and San Francisco Railroad Company, better known as the "Frisco," has built or added to its system, over nineteen hundred miles of new railroad during the past five years. Also another thing to be remembered is the fact that all of this new railroad traverses newly settled sections of the Southwest, principally in Missouri, Arkansas, Indian and Oklahoma Territories and Texas.

These sections of the Southwest are rapidly settling up with a good class of Northern immigrants impelled to locate in the Southwest for the following reasons: Lands for the cultivation of a wide range of crops can be purchased most reasonably; the climate is mild and there are no extremes of heat and cold, such as obtained in the Northwest, and ample rainfall annually to mature crops.

Most of the sections traversed by these new lines have not previously enjoyed the privileges of railroad communication and these new lines, therefore, opened up entirely new markets to the manufacturer and wholesaler.

It is a self-evident proposition that it is cheaper to utilize in manufacturing the raw material at its source, instead of shipping it in a crude state to some large city or remote, thickly settled section. This is a fact that manufacturers are beginning to realize more and more and for various reasons are turning their steps toward the singularly favored locality.

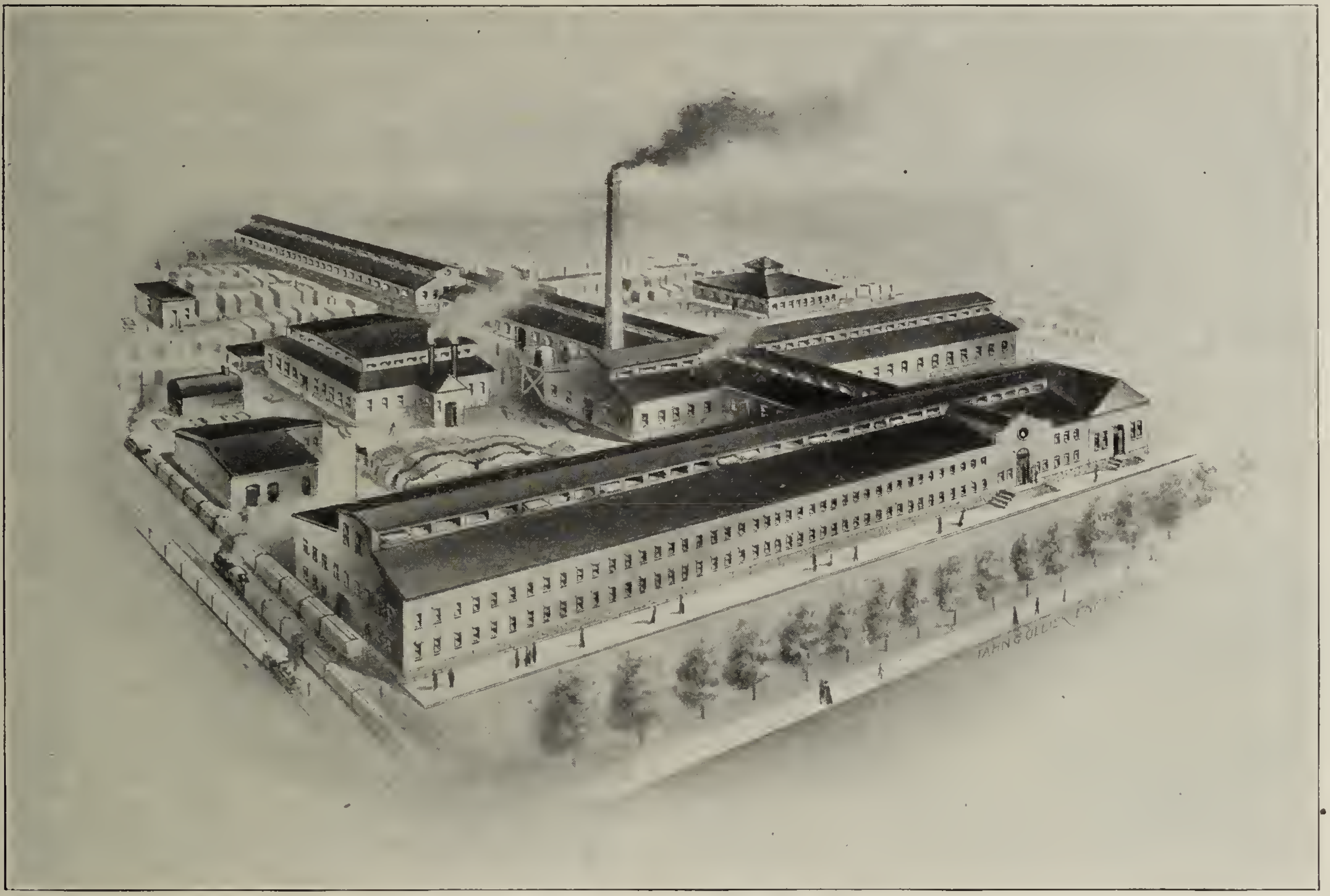
The principal raw materials available in large quantities for manufacture, are cotton and its by-products; all the grains; almost every kind of timber found in the North Temperate Zone; all of the truck crops, vegetables, melons and fruits; minerals, including iron, lead, zinc, gypsum, stone, including granite, limestone and cement rock suitable for Portland cement; highest grade of shale for pressed, paving and fire brick, pottery, tile and sewer pipe; and last and most important, this fact, that in almost every portion of the States and Territories traversed by the Frisco System, fuel supply is abundant, either bituminous or simi-anthracite coal, oil or natural gas being procurable.

Labor troubles also in the Southwest are of much less frequent occurrence than in the large cities and thickly settled localities of the North and East.

Possibly the most attractive inducement, however, that could be given manufacturers to secure the location of their industries, is the fact that they would in most cases have a proprietary right to a vast section of rich territory, as they would be almost the only manufacturer in their particular line in the Southwest. They would, therefore, be free from most of the competition met with in the factory sections of the North and East.

From the above extended list of natural resources for manufacturing it can readily be seen that almost every kind of manufacturing plant can be accommodated with an excellent location.

Mr. M. Schulter, Industrial Commissioner of the Frisco System, St. Louis, Mo., would like to get in correspondence with any manufacturers not entirely satisfied with their present factory locations and will cheerfully furnish data regarding favorable locations, inducements, etc.



Home of the "New South" Brick Machinery.

HOME OF THE NEW SOUTH BRICK MACHINERY.

J. C. Steele & Sons, Statesville, N. C., write that they not only expect to have the pleasure of meeting many of their friends and patrons at the National Convention, but that they hope those coming from the South will stop at Statesville en route and inspect their plant, machinery and supplies, some of which are nicely illustrated on pages 189, 190, 191 and 192. The past year has been the busiest in the history of the company. Their extensive shops, which are illustrated above, have been run full-handed all through 1905, and the prospects are good for the continuance of this gratifying condition indefinitely, for the demand for New South brick machinery grows steadily. It is their constant study to meet this demand with the best machinery and appliances that experience and skill can produce. Their 1906 catalogue illustrates their entire line, including an extra heavy machine for large capacity plants. Write them for a copy, mentioning The Clay-Worker.

BY THE LIGHT OF THE KILN FIRE

THE COLONEL TALKS SHOP.

"Good morning, young man," said the Colonel. "I'm glad to see you, suh, always glad to see anything or anybody connected with THE CLAY-WORKER. Its got the true ring to it, early morning and late at night, always the same, always disseminating information and working for the interest of the clayworker. It's both persistent and consistent, and that's something worth trying to these days. You keep the trail warm and never lose the scent, and that's what some others I could name don't do. You trade paper boys do a lot of good in the world, suh, and I like every one of you, but sometimes I see one I get sorry for, one that becomes afflicted with what I call the advertising heart. That's a disease that's never been named in the medical books, but its there just the same, and I can pick two different stages of it, the early palpitating stage and the later chronic affection in which the man don't see anything that looks like good copy unless it comes from an advertiser.

"There are some trade papers that make me think about old Bruce, one of my best fox hunters. Old Bruce was a great trailer and could not only pick up a scent along with the keenest, but he could follow well. But, suh, the great trouble with him was that no matter how hot a fox trail he was on just let a cotton cross in front of him and off he'd go. I whipped him for it time and time again, but it didn't do a bit of good, and he finally got to be such a disturbing factor with the pack that I had to give him away to old General Bowers, who was getting too old to chase foxes and wanted a good dog to chase rabbits for him to shoot at on the run. Of course, old Bruce finally got so he was no good at all on a fox trail and that's the way it is with some trade papers when they take to leaving the main trail to chase after small game that bobs up along the way, they get to the chronic stages of advertising heart where the're only good for chasing small game.

"How's that? Sure, a man should urge and push the advertising end of his paper, and it's also right and proper to take due notice of other things that bob up from time to time along the main trail, but it makes all kinds of difference the way you go about it. It's right and proper that the trade should be informed of the new kinds of building material that sets itself up in competition with clay products, so that the trade may be equipped with the knowledge necessary to meet it, and that's all. You shouldn't leave the trail, nor forget that it is the clay working industries you are catering to, and expect to draw most of your support from. You don't forget it, and that's why I'm always specially glad to see any one from THE CLAY-WORKER.

"There's another thing you do, that I like, too; you furnish entertainment as well as useful reading. Some technical trade papers are too heavy in their diet, and others are what we call "bone dry," but you all manage to give us a good menu—good steak, salads, sauces and spices, and cheese and coffee, and all the time you don't forget to be strictly a clay worker's journal. Maybe you lose a little small game now and then by sticking to the main trail all the time, but you just stick to it and you'll come out ahead in the end.

"I know it's discouraging at times to see other papers who do not merit any great support getting practically as big a share of patronage as the more faithful ones, and the situation is not improved by the fact that you can't properly complain about it, and still maintain the high degree of self respect you feel. There are some papers which are so plainly and directly selfish that they will actually lend their aid to the promotion of industries inimicable to those which they are supposed to represent for the sake of the advertising patronage to be obtained in return and regardless of the fact that they are frequently being made a vehicle for injuring those who are presumably their best friends. Being a paper of established reputation and dignity you naturally feel like it would be belittling youself to get down to point these things out to the trade and besides they would probably be small enough to come back at you with the assertion that there are selfish motives back of any trade paper or any industry for that matter. And it is, too, it is really personal gain of some kind that we are all after. There is, however, not only a distinction, but a very wide difference in the ways of attaining an end. We get an idea of that in the every-day craze for money, regardless of business enterprises. We all want money, some people work for it, some scheme for it, some beg for it, and some utterly disregard all laws of the land and deliberately take it from others by stealth and main force. That's the way it is in business enterprises, or even in trade paper work, we are all after a fair share of money, but the right thinking sort want to get it by giving a good measure of conscientious and effective service in return. There are others not so scrupulous about what they give in return, but are more concerned with getting the "dough" as rapidly and as easily as possible and from any and every source available, and give in return not what might be called a good measure of service, but the least measure possible to get what they are after. Sometimes, even in the newspaper world, they get down to the plain hold-up game, but the following of this latter method is limited to a short run as a rule, and are usually brought up short in the end. So it is really the more seductive and oily kind that make the most trouble. They are a thorn in the flesh and they get advertising patronage that they don't deserve, and lessen in some measure the revenue due the faithful trade papers for their conscientious work, and sometimes I think it will always be so, but then again, I think differently. Investigation is getting to be a fad these days, not only in public life, but private enterprises and not only by public officials, but by private citizens. In other words, we are now setting up and taking notice, and read between the lines, so to speak, and while we may continue to get fooled a little in spots here and there, the majority of the thinking world to-day is beginning to have a better appreciation of the right kind of effort.

"How is that? The public likes to be fooled."

"Now, look here young man, don't you ever believe that joke. That's a false scent, suh, and is no more like a real trail than an anise seed bag run is like a genuine fox hunt. It may look like it, and it may smell like it, but when you catch up with the game it is a different thing entirely. No sir, the public don't want to be fooled by a long shot. What the public does want, is new things, new ideas, in short, progress. And this desire for new ideas and things is so strong that it enables unscrupulous schemers to take advantage of the public, but that does not alter the fact, that what the public wants is not to be fooled but to be informed, and suh, its you fellows running trade papers that can do more to supply the desire for information leading to progress than anybody else, and its ideas of this kind you should rack your brain with, and don't bother about what the other fellows are doing.

"You are willing if we'll just tell you how to do it?"

"I know you are, and by George, suh, if you'll just come around again after I have had time to think it over, I'll see if I can't give you a pointer or two that's worth while.

System is a good thing to have in your business, but it should never take the place of nor interfere with the free working of brains, for brains will beat system any day in the world.

Written for The Clay-Worker:

BUTTON-HOLE TALKS.

How is Your Office System?

Many of our readers probably have been, or are at the present time engaged in the work of overhauling their plants, making additions and changes here and there, sometimes to enlarge, and nearly always to improve the work of manufacturing, and now the question is, did they stop at the plant, or did they carry this idea on into the office with them and did they carry this idea in their business and accounting methods? The chances are that they carried the work into the office, too, because there are not many business men who have escaped the new system ideas in some form or other during the past year or two. The promoters of the new ideas have been pushing them industriously and preaching system by letter, by circular, through magazines and by word of mouth, until the average man feels that if he has not got a system he is a back number.

The other day while the writer was having a little "button-hole" talk with a traveling salesman, the subject of system in business came up and in reply to a remark that system was a good thing, but a man could get too much of it so that it will interfere instead of assist in his work, the traveling man said:

"Listen! Speaking of system, I want to tell you about a customer of mine that has the finest system in the world. He don't keep books, he don't keep anything, and he is the original simon-pure "Do It Now" man. When a customer comes to buy something he pays the cash for his stuff when he takes it away. That is "doing it now" for you with a vengeance, but it eliminates the necessity of keeping accounts. When the man buys a machine or anything else, and the bill comes in he writes out a check for the amount, pins it to the bill and mails it out again. There is simplicity and promptness for you and it is an admirable quality, but then it has its weak points, too, just as many good things have when you carry them out to the extreme point. This customer of mine carries this idea to "do it now" in his head all the time, when he reads his morning mail he answers his letters immediately and then throws them in the waste basket so that they are done with. When a trade paper comes in he reads it through, makes a mental note of any information that he considers worth while, and into the waste basket it goes. The same thing happens with circulars and catalogues. When they come in he looks them over and if there is anything in them he wants further information about, he writes a letter and then into the waste basket they go with everything else. As a result his office is always clean and his business finished up-to-date all the time. There are no accumulations and no left overs."

After giving us a few moments to digest this word picture, the traveling man continued:

"The weak point in this man's system comes from the fact that he does not keep anything, and then if it occurs to him some day that he wanted a machine, or wanted anything else he has no place to turn to look it up and is completely in the dark until some fresh circular comes in, or some traveling man comes along with what he wants. And, while he remembered faces of traveling men, myself included, the names of the firms they traveled for frequently escape his mind. Do you know what it all made me think of? It made me think of the fact that the average business man does not properly appreciate either the trade literature, or the circulars and catalogues that reach his office. When you get where these things are entirely absent, it is enough to inspire a man to carry his trade papers home with him and carefully file away all the catalogues sent him by machinery and supply men, because he realizes they contain a lot of both general and specific information, and it is information that he is likely to want some time or other, and when he does want it it will be very important to get it."

"This is a good thought for us all to have in mind in the early days of the new year when new catalogues and circulars are coming in from various sources. We have been spoiled a little by the liberality of our friends, just as the whole country is spoiled a little now and then by prosperity, until we never value nor care for this matter as we should, and we should shake ourselves out of this and make a little golden rule to the effect that we will do by the other man's catalogues as we wish the recipients of ours would do by them, and that is, make a place for them where they will be preserved in good order for reference and consideration at any time during the year. Not just one or two of them, but all of them, for the smallest kind of a circular may develop into a big item of importance some time during the year when we want to know about the matter contained therein and want the information quickly, as is generally the case when we do want things of that kind. Therefore, let us not neglect to include in our office and accounting reform the subject of the proper treatment of trade literature, including everything from the best trade paper down to the smallest circular."

THE NATIONAL CAPITAL AND ITS MANY ATTRACTIONS.

Washington is one of the most charming cities in the world. Its great public buildings alone entitle it to distinction, and being the center of the Nation's political life, makes it doubly attractive. The average brickmaker is, as a rule, a potent factor politically in his own bailiwick, hence, it is but natural that those who are going to attend the National Convention will want to avail themselves of the opportunity of stopping at Washington en route to the Convention. This they can do either going to or returning from Philadelphia by simply depositing their ticket on arrival at Washington with the depot ticket agent, and there will be no charge at all in this connection. The same is true at Baltimore, and brickmakers who can, will do well to make at least a brief stop there and see the remarkable amount of brick work that has been done there since the fire. Those coming from the West and South who anticipate visiting either city will find it advantageous to travel via the Baltimore & Ohio Lines for all of their splendid fast through trains go directly through and stop at these cities. Referring to this feature, the N. B. M. A. State Vice-President from Maryland, the redoubtable Albert D. Klein, of J., of Baltimore, writes:

National Capitol, Where Congress is Now in Session.

"I desire to suggest to our members and delegates attending the coming National Convention that they travel via the Baltimore & Ohio Railroad, and demand a stop-over privilege for Washington and Baltimore. By doing so, they will have an opportunity of visiting the Nation's capital and Baltimore, where they can see what one short year has done in the rebuilding with brick. My reason for making this suggestion is that the two cities above named are on the direct route of the Baltimore & Ohio to Philadelphia and does not require round-about travel. It will afford me great pleasure to show visiting brickmakers about our city on any and all occasions, and particularly members of the N. B. M. A."

Those coming from Cincinnati, St. Louis and Chicago, or points beyond, can avail themselves of the splendid limited trains of the B. & O., than which there is nothing better in railway service, including their famous Royal Blue trains, which are run every hour between Washington, Baltimore, Philadelphia and New York, at either of which cities stop-overs will be allowed as stated. Tickets should be purchased through to Philadelphia, and certificates taken if reduced rate is desired.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-THIRD YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

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One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

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☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

227-233 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

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CURRENT COMMENT.

The New Year certainly does look good to THE CLAY-WORKER.

* * *

Not alone because of this splendid Anniversary issue, but because the clayworking trades were never more prosperous.

* * *

It is beginning to look like the President will have to forego a bear hunt or two and go down and dig that Panama canal himself yet.

* * *

There is both profit and pleasure to be found at Philadelphia, February 5-17, in generous measure. Just how much, though, depends on yourself.

* * *

To get the most out of the meeting you must be in attendance, come early and get a front seat. Don't miss a moment of any session for if you do, you may miss the very thing of most importance to you.

* * *

Every man is a trustee, and a trustee only. Years before he died Charles T. Yerkes said: "The money I have made I don't consider my own at all. I am merely holding it in trust for the public good, to do as much good as I can."

* * *

We are indebted to Charles W. Raymond, of Dayton, Ohio, for some of the photographs with which the interesting article on Mexico is illustrated. Mr. Raymond has a large collection of Mexican views, secured during an extended trip to the "Land of Sunshine" some years since.

* * *

The story of the great wall of China, page 57, will be read with more than passing interest by very many of our readers. We hope to have on exhibition at the National Convention the brick referred to in that article, which is a dearly prized souvenir of a trip to that country by our correspondent.

* * *

The historic sights of Philadelphia alone will make the Convention trip worth while.

* * *

It is not the man that goes to Philadelphia, but the one that stays at home who will have cause for regret.

* * *

Simplicity is always looked on with favor as a factor in mechanics, and it is also a pleasant quality to observe in mankind.

* * *

Modesty is generally regarded as the proper companion of greatness, yet it's about as hard to keep the two together as it is to keep a hodcarrier from asking for more money every spring.

* * *

And now they are going to try to discover the North Pole with an air ship. Well, if they do it, regardless of the importance of the discovering of the pole itself, it will be a big thing for the world in the way of demonstrating the practical usefulness of the air ship.

* * *

Come on the water wagon if you want to. The main thing is to come, and if you do you will "get your money's worth." No matter whether you believe that scientific papers are all theory or that some speakers talk just to hear themselves, you will carry more away than you take with you, unless you are both deaf and dumb, and even so you can make signs.

* * *

We commend to every reader the able paper in this issue by Architect Fitzpatrick, entitled "Fire Proof Houses, Why Not?" It is a subject that ought to be very dear to the heart of every clayworker. Mr. Fitzpatrick will present an equally instructive paper at the National Convention. Members of the N. B. M. A. should second his efforts earnestly for a better building sentiment is directly in their interest.

* * *

In building the fire-proof house, illustrated on page 39, Mr. H. H. Fate, of Plymouth, Ohio, set an excellent example for his associates in the clay business. That is one of the many ways of promoting the use of brick, tile, etc. Mr. Fate says he is frequently visited by architects and builders of neighboring cities who attest their appreciation by designing and building similar structures.

WHY SHOULD BRICKMAKERS ATTEND THE NATIONAL CONVENTION?

"What argument should be put forth to induce brick manufacturers to attend the Philadelphia meeting?" is a question that was asked a well known association worker recently.

"What argument?" said he. "What's the need of any argument on the subject at all? Is there any room to argue with a man that he must set out fruit trees if he expects to have an orchard and gather fruit? The matter is so self evident that it looks like there is neither room nor cause for argument, and that is the way it is with the Brick Manufacturers' Association. That we are gathering fruitful results from it, any man who has made a study of the progress of the clayworking industry since the formation of this association can see without being told, and having gathered fruitful results for so many successful years, no doubt need enter anyone's mind but what the crop will continue and enlarge. And, with this fact before us it should not require any argument to convince a man of the importance of attending these meetings, for to have good meetings and get good results we must of necessity attend, and participate therein, just as the man who expects to raise fruit must attend to the planting and cultivation of the trees. I take it, ing and argument will most appeal to people and induce them however, that what you want to get at is, what line of urg- to drop business for a few days and go over to Philadelphia. The results, of course, will take care of themselves if you can get the men there, and your object is to get argument which will appeal most to the greatest number. It looks strange, don't it, that a man sometimes has to be persuaded, prodded and urged generally to do something that will result in a benefit to himself? Still, that is humanity, and we have to face it. The preacher has to face this element in humanity and bring every kind of argument to bear he can think of to turn men from the ways of wickedness, and an association worker has to face the same thing in a different way and urge men to do something which they should be anxious to do themselves.

MANY MEN OF MANY MINDS.

As to the arguments that appeal to humanity; some things appeal to one man and some to another. One man wants to see his returns from nearly all efforts come in the form of dollars and others seek after information. The student we might say, can be induced to do things for the sake of getting new ideas and information, especially is this true of the deeper students who delve into scientific research. The jolly man who loves to mingle with his fellow men on every occasion offering opportunity for friendly intercourse, is attracted by the social side, and the public spirited man will answer an appeal for the public's good; the strictly modern man in the industrial world will go thousands of miles for new ideas along the line of labor saving devices or mechanical apparatus that will serve to improve his product in some way, and so it goes. One man turns an attentive ear to one kind of appeal and one another, and some like a mixture of various kinds but no matter what a man likes or what he is looking for in the way of progress there is no better way to find it than at the annual meeting, for it is there in all shapes. There is business information, scientific research, social features, new ideas in mechanics and various other features, enough in all that every brick manufacturer who attends can get something out of it to make the trip worth while. In short, no man need be disappointed, unless he goes there expecting too much, and he can expect a whole lot, too, and not feel that his trip has been in vain. Of course, he need not expect the association to run his brick business for him, that is not what it is for. But it does help to equip the members so that they can run their brick business to better advantage, and that is all any fair-minded man should ask, and a man that can get that in return for a trip to an annual meeting, not only ought to be satisfied, but he ought to be so anxious to go that there would be no need to urge him to be present. Moreover the date of the meeting is such that there is practically no excuse for the average brick manufacturer not attending. It is in the mid-winter season when there is less doing in the brick business than any time of the year, and about all the excuse the average man could have is, that he is busy repairing his plant. And if that's the excuse it is really no excuse at all and is indeed an argument in favor of going, for he has a mighty good chance to get ideas there that are worth while in the use of making alterations and changes in his work."

BETTER BUILDINGS AND HOW TO GET THEM.

One man who is doing his full share toward the encouragement of better buildings is F. W. Fitzpatrick, secretary of the International Society of State and Municipal Building Inspectors, Washington, D. C. Mr. Fitzpatrick is a prolific and versatile writer of unusual power, and in addition to a continued series of articles in trade journals on the subject, he is now wrestling direct with the Governors of the various States on the subject of legislation for better building regulations, which mean in substance, to use the force of building restrictions, to make those who will not see the benefits of better construction, realize that it is a matter of such importance that they can either come along of their own accord, or be prodded along. To facilitate the work of formulating legislation, Mr. Fitzpatrick has made up a draft of a bill to form a basis for uniform State laws with regard to building. This is an idea, this establishing of building restrictions for rural districts that our country brethren may shy from a little at first, but on closer acquaintance it is difficult to find anything that need work any unreasonable hardship to any one on this point, a point that will probably beget the most objections, because of the traditional and hereditary independence of rural people. The bill is worth reading for the sake of allaying apprehensions, if nothing else. That portion of the draft applying here reads as follows:

"1—In no city or town, village, settlement or aggregation of buildings adjacent but owned by different individuals, shall there be built a frame building of any description more than three stories high, or forty feet above the ground.

"2—If such frame structures be built up solidly or continuously upon a block, or along any street or highway, there shall be dividing walls, without any openings in the same, and carried up to at least two feet above the roof line, at least every (1) sixty feet in width and to the full depth of the buildings. Such walls to be at least two bricks thick or their equivalent in fireproof tile, stone, concrete or other incombustible material. And in such continuous buildings, where there are more than four such divided spaces, then the roofs shall be of metal or slate or other spark-proof material.

"3—Detached houses and other buildings not higher than three stories and built entirely of wood, or with wooden outer walls and roofs, must be at least ten feet apart. If built of brick walls and uninflammable roofs, residences and other buildings may be five feet apart, but the windows in all such walls must not be opposite each other; and if windows be further provided with automatically closing fire shutters or wired glass (2) sash, such adjacent walls may be even closer together. The same regulation as to width between buildings is to govern widths of light courts or other openings in the buildings themselves when the solid parts of such buildings are thirty feet wide and over."

IMPORTANCE OF UNIFORMITY OF BUILDING REGULATIONS.

The regulations recommended as applying to more pretentious building operations apply mainly to cities where there are already building restrictions, some more stringent than others, and there will not likely be, or at least should not be any strong objections from the large cities, because the object of the proposed legislation, while it may not conform in exact terms to some, does tend toward uniformity of building regulations, and this is a matter of importance to all cities. Uniform legislation, and legislation that will protect the man who desires to build well and safeguard against having his own property endangered by a less scrupulous builder with an eye to immediate returns more than to public good. What objections to legislation of this kind that may come from the large cities will be a matter of detail rather than of real objections, and what tendency there may be on the part of the country members of the legislators to object *in toto* should not stand against the mild restrictions that apply to smaller towns. There is a natural tendency to build better all over the country, and while voluntary action in this line is more to be desired in some respects than the force of restrictions, still, it is by restrictions that we are brought to recognize that while we have a right to please ourselves in designing our homes, we should have due regard for the welfare of others, too, if we are to expect any protection ourselves, and it also encourages study and education on the subject of ways and means to build more safely, especially against loss by fire, which has, according to the figures of Mr. Fitzpatrick, a record in property destruction during the year 1904 of $230,000,000. while smaller in figures, but of greater importance, comes a loss of 7,000 lives during the same period through this agency. With these figures before us there is no need to argue that it is time for a general awakening on the subject, and there is no question but what Mr. Fitzpatrick's efforts deserve to meet with a full measure of success.

THE MUSIC THAT CARRIES.

I've toiled with the men the world has blessed,
And I've toiled with the men who have failed;
I've toiled with the men who strove with zest,
And I've toiled with the men who wailed.
And this is the tale my soul would tell,
As it drifts o'er the harbor bar:
The sounds of a sigh don't carry well,
But the lilt of a laugh rings far.

The men who were near the grumbler's side,
O, they heard not a word he said;
The sound of a song rang far and wide,
And they harkened to that instead.
Its tones were sweet as the tales they tell
Of the rise of the Christmas star—
The sounds of a sigh don't carry well,
But the lilt of a laugh rings far.

If you would be heard at all, my lad,
Keep a laugh in your heart and throat;
For those who are deaf to accents sad
Are alert to the cheerful note.
Keep hold on the cord of laughter's bell,
Keep aloof from the moans that mar;
The sounds of a sigh don't carry well,
But the lilt of a laugh rings far.

—Strickland W. Gillilan, in Success.

THE POTTER AND THE POT.

I've stood beside old ocean and seen the waves roll high;
I've stood beside the æronaut who sailed into the sky;
I've watched the daring fireman, when the flames roared fierce and hot,
And I've watched the patient potter, as his brain evolved a pot.

His foot upon the treadle, as he deftly turned the wheel;
His hands deep buried in the mud, with fingers quick to feel
And fashion with dexterity *true art without a blot*—
Ah, wondrous work to look upon, this potter and his pot.

Sometimes its plain sides shimmer—homely to you and me—
But full of *ugly beauty*, if we could only see.
The *thought that art intended*, the thought the man had got—
How divinely shaped for study, the potter and his pot.
Sometimes with wooden instruments he weaves upon its side
Strange creeping vines, and leaves, and flowers, forever to abide
In the dull clay he's fashioned, with hands and brain, I wot—
A teacher is the potter, a lesson is the pot.

Sometimes his strange brain working, which his fingers quick obey,
He fashions birds and animals, or lizards, from the clay.
If we could fully understand him—but most of us do NOT—
How we would heap with honor this potter and his pot.

True art may gaze from canvas, polished wood and stone;
True art may sound from music, in fierce or tender tone,
But losing ne'er an atom, and changing ne'er a jot,
True art is with the potter and *gazes from his pot.*

Strange forms his fingers fashion, strange thoughts they speak to me;
His *soul has told its longing* in his *art of high degree,*
But my mind is slow and clumsy when I'd have it swift and hot
In picturing this potter and in picturing the pot.

His shelves are filled with "beauties," some short, some very tall,
And some are red, and some are blue, some colored not at all.
What e'er in life's confusion may be my final lot,
I'll not forget the potter, I'll not forget the pot.

* * *

The above poem was first printed in the *New York Sun,* November 23, 1902, with the following introduction: "Written and dedicated to Geo. E. Ohr, the World's Greatest Art Potter, by one who has had the privilege of gazing upon the wonderful creations of Mr. Ohr's hand and brain."

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THE CONTINUOUS KILN is rapidly coming into use in America. It is my aim to lead in this movement. I have plans of five different forms of Continuous Kilns for burning all kinds of brick with all kinds of fuel.

W. D. RICHARDSON,
Consulting Engineer to the Brick Industry.
See page 245.

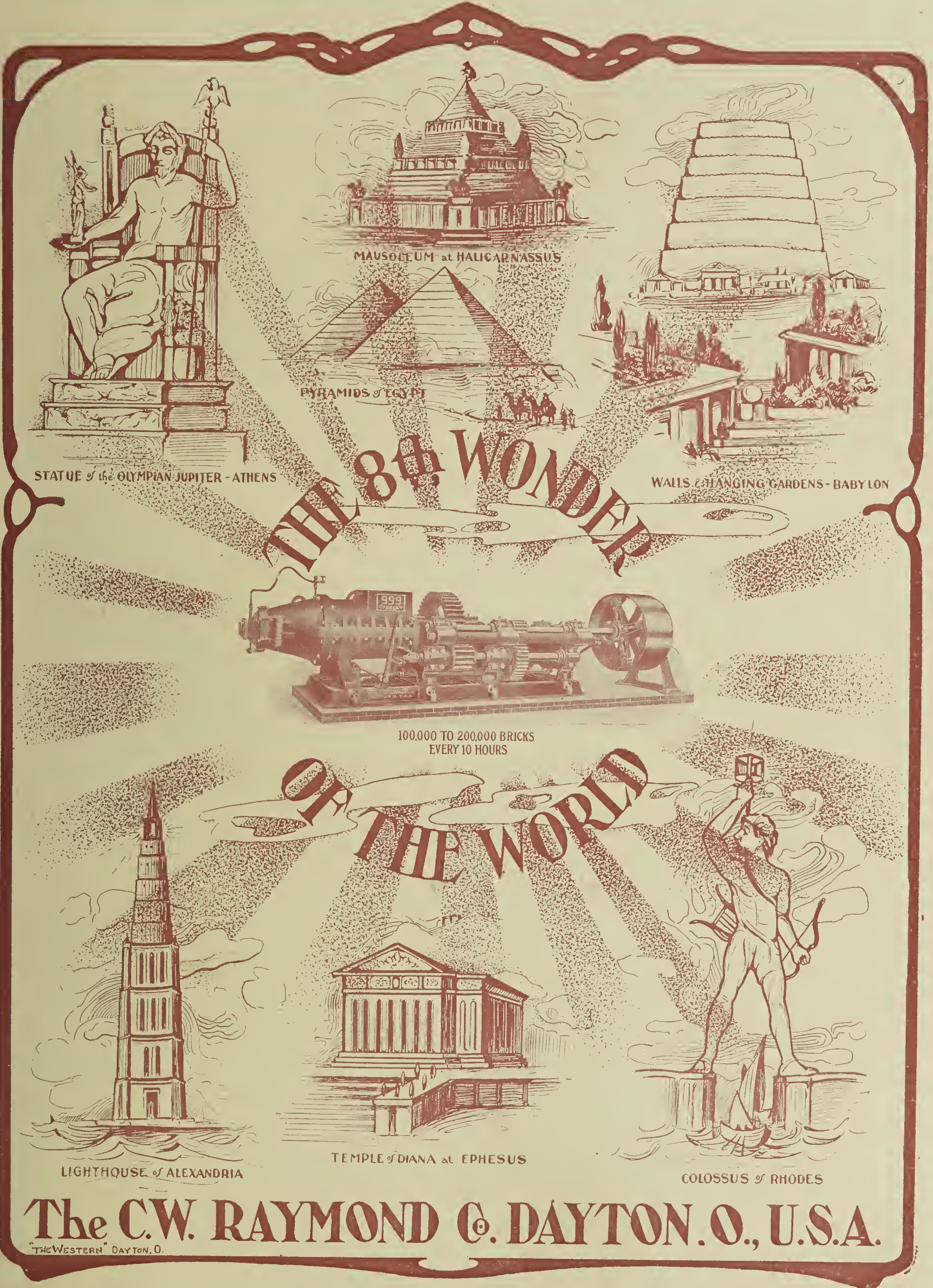
WANTED, FOR SALE, ETC.

FOR SALE—Penfield Brick and Tile Machine, with complete attachments. Horse power or Steam. Cheap to quick buyer.
G. C. BOWEN,
1 1 cm. R. F. D. No. 11, Corry, Pa.

FOR SALE OR TO LET.
A complete and only Brickyard in city of 60,000 population, in good running order. Demand unlimited, and prices good. Owner 35 years in business and wishes to retire. Address
SHERMAN A. CASE.
1 1 1 25 p Shenectady, N. Y.

WANTED—At once a first-class experienced brick burner and setter. State age, experience, salary expected and reference.
B. S. ELMES.
1 1 cm Fergusson's Wharf, Va.

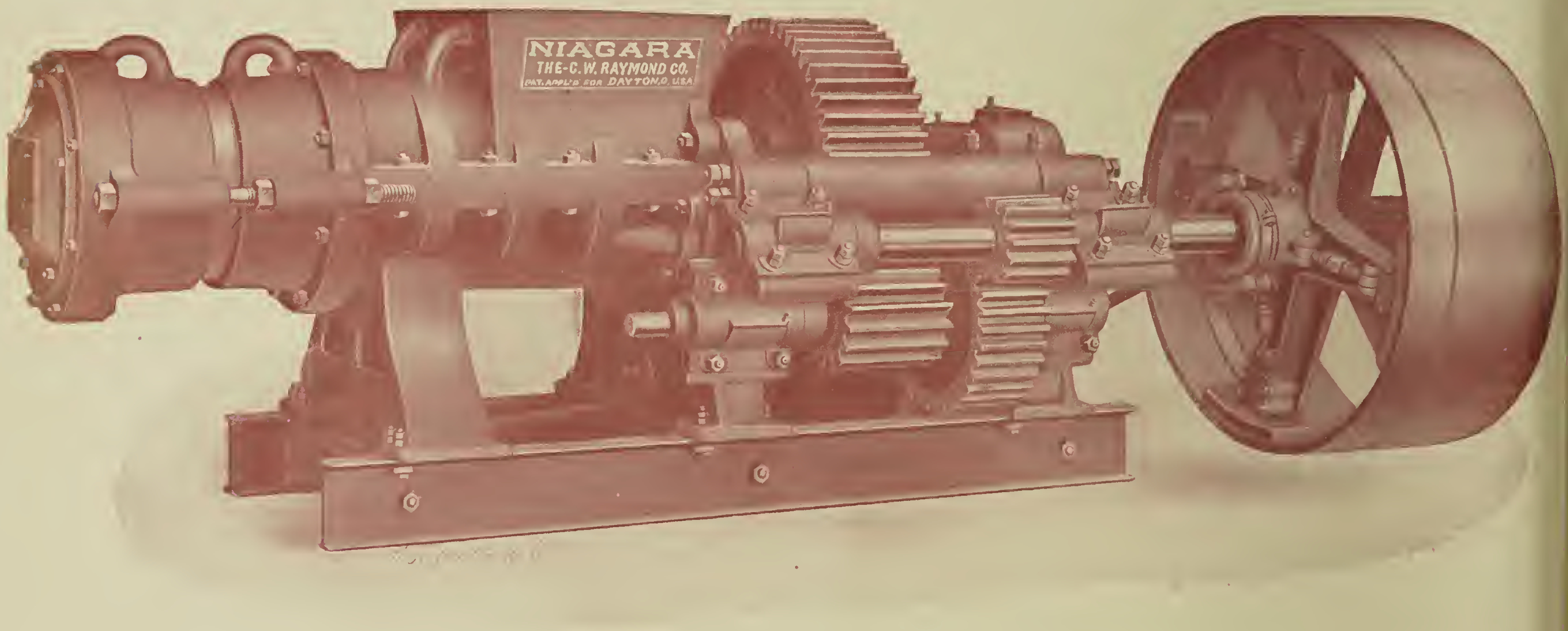
For Sale, Wanted, Etc., Ads Continued on Pages 158, 159 and 160.


MAUSOLEUM at HALICARNASSUS
STATUE of the OLYMPIAN JUPITER - ATHENS
PYRAMIDS of EGYPT
WALLS & HANGING GARDENS - BABYLON
THE 8th WONDER
999 SPECIAL
100,000 TO 200,000 BRICKS
EVERY 10 HOURS
OF THE WORLD
LIGHTHOUSE of ALEXANDRIA
TEMPLE of DIANA at EPHESUS
COLOSSUS of RHODES
The C.W. RAYMOND Co. DAYTON, O., U.S.A.
"THE WESTERN" DAYTON, O.

The Grandeur of Niagara

Is Exemplified in the Working of the Raymond Niagara Hollow Ware Machine.

The Niagara is essentially a long life and heavy duty machine of great capacity. While primarily a Hollow Ware Machine, it is by no means entirely so, having a large brick capacity. So constructed that the material is gotten in front of the auger without compression, thus allowing all the force of the massive machine to be exerted at this crucial point.



For Fire Proofing, Conduits, Brick, Hollow Block, Etc.

RAYMOND NIAGARA HOLLOW WARE MACHINE.

New York
Boston
Pittsburgh
Birmingham
Kansas City
San Francisco

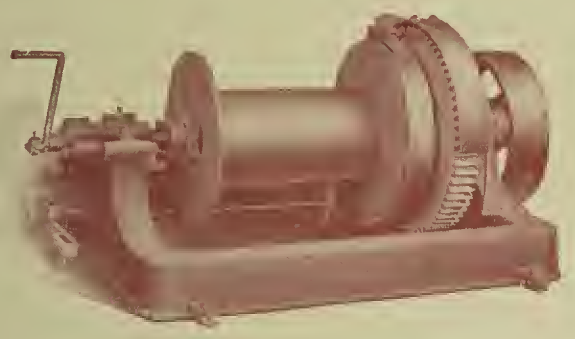
The C. W. RAYMOND COMPANY,

DAYTON, OHIO, U. S. A.

Send for
Catalog
Free for
the Asking

A POWERFUL EFFECTIVE HOIST.

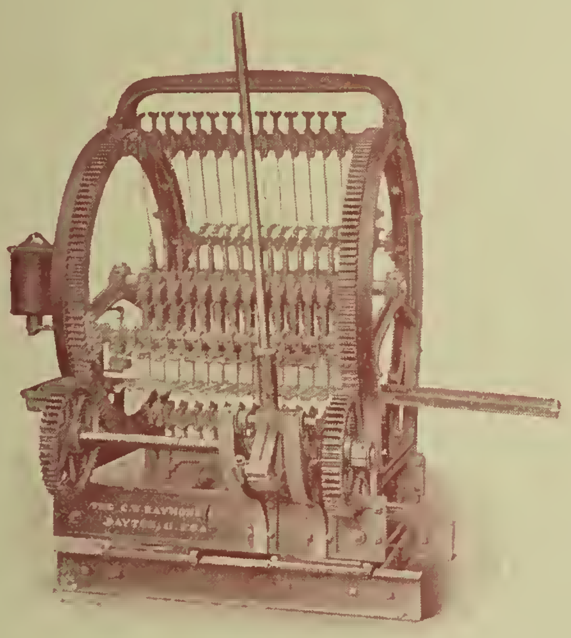
All bearings self-oiling, providing ample lubrication. The friction surface is greater and more powerful, and the band brake is wider than any drum of its weight; we provide maximum tractive power and make complete control of the cars on any grade easy and sure. By less than a quarter turn of a small lever, the two friction surfaces are brought into contact, and the machine becomes operative. By releasing the lever, the friction surfaces separate, leaving the car stationary, or to be controlled down the incline by the brake. Our exhibit 58 gives a full detailed description.



The C. W. RAYMOND COMPANY,

DAYTON, OHIO, U. S. A.

A CUTTING TABLE OF NEW DESIGN.



A machine which incorporates the desirable features required for a successful down-cut Cutting Table. It has a positive down shear cut entirely through the column of clay, which in connection with its staunch construction, makes it indispensable for cutting fine face brick, without repressing.

Exhibit 57 enters into detail concerning this, The Raymond Universal Cutting Table.

The C. W. RAYMOND COMPANY,

DAYTON, OHIO, U. S. A.

THE
C. W. RAYMOND Co.
CLAY WORKING MACHINERY
VICTOR
THE C. W. RAYMOND CO. DAYTON, OHIO U.S.A.
555
999 SPECIAL
777
THE C.W. RAYMOND CO. DAYTON U.S.A.
OFFICE AND WORKS
DAYTON, OHIO, U.S.A.
THOS. COULTER CO. CIN. O.

THE NEW CROP OF CALENDARS.

THE CLAY-WORKER is indebted to many of its friends for souvenirs in the form of calendars. The 1906 crop is an exceptionally large one. They are all sizes, colors, shapes and designs, many of them being veritable works of art. The majority of them are of the poster size. The most striking of this type is that of the Laclede Fire Brick Co., St. Louis. It is the second of a series which might well be termed diabolic in character, his Satanic Majesty and his Imps being conspicuous figures in the design. The next prominent feature being a testimonial letter from Hades commending the Laclede Company for the splendid quality of fire brick which it has furnished. That Laclede brick stand a high degree of heat is clearly depicted.

Next in originality of design is the calendar of the Marion Steam Shovel Company, Marion, Ohio. It is a lithographic production, rich in color effect, and illustrates the various uses to which the Marion Steam Shovel is adapted. These calendars, we take it, are not intended for general distribution, but for souvenirs for patrons of the firm.

The Fernholtz Brick Machine Company, St. Louis, Mo., has chosen a hunting scene entitled "Steady," handsomely engraved and embossed. The calendar is large and made especially effective by the figures appearing in white on a black background.

James W. Hensley, Indianapolis, presents a photographic reproduction of the noted painting, "The Old Guard," beneath which is the announcement that he is prepared to furnish improved brick machinery and all manner of brickyard supplies on demand.

The Jeffrey Mfg. Co., Columbus, Ohio, offers for 1906 an original design illustrating a mining scene and bearing the legend, "The Jeffrey cuts the world's coal and Jeffrey locomotives haul it." They might have added that Jeffrey crushers and conveyors play a prominent part in handling this and similar materials. It is modest both in size and general appearance, and we presume a copy can be had for the asking.

The Roessler-Hasslacher Chemical Company's offering is as usual, artistic, and shows a photograph of a beautiful maiden in Greek costume, bearing a vase upon her head. It is appropriate in that this firm, whose main office is 100 Williams St., New York City, caters to the ceramic industries, and is headquarters in this country for all manner of clay glazes, enamels and chemicals used by clayworkers.

E. M. Freese & Co., Galion, Ohio, with usual modesty, present a beautiful landscape, "Early Morning in Virginia," upon which is printed only their name and address, and the words "Brick, Tile and Terra Cotta Machinery." The calendar is so small, but the picture is so pretty that few who receive one will fail to find a place for it.

C. K. Williams & Co., Easton, Pa., have got out an original calendar pad as well as hanger, each sheet containing some special refrence to themselves or their products. On the first sheet is the couplet:

"Wish you happiness,
Wish you health,
Wish you honor,
Wish you wealth—and a prosperous New Year."

On the folder itself and grouped around the announcement that they are manufacturers and importers of dry colors, paint oxides, talc, paper fillers, clays and various dry minerals, are pictures of four different plants.

A. M. & W. H. Wiles & Co., Grassy Point, N. Y., present a pretty little nursery picture entitled "Have a Drink," beneath which is the announcement that Grassy Point, Richland Co., N. Y,. is the home of brick machinery, brick mold, trucks, etc.

Sibley Brothers, Birmingham, Ala., announce that they are operators and shippers of steam coal on a calendar which there is a placque of a most beautiful brunette, "Purity." "Purity and Sweetness" would have been a better descriptive line.

C. N. Adams, brick manufacturer, Alexandria, La., has favored his friends and patrons with a symphony in brown and decorated with a reproduction of the painting, "See, the Conquering Hero Comes," the hero being a chubby, barefoot lad who has been on a fishing trip, as shown by a string of "shiners."

E. T. Lewis Company, Nashville, Tenn., announce that they are general contractors, brick manufacturers and builders on a catchy water-color sketch consisting of a group of happy children in a cart drawn by a patient donkey.

E. S. McClain & Son, brick manufacturers, 109 Park building, Pittsburg, Pa., present a painting of an Indian chief "On Watch," during the "good old summer time" evidently, for his chief raiment consists of a bunch of feathers.

The Brockway Brick Company, Brockway, N. Y., has duplicated their design of the previous year, showing their plant, a picture of Mr. Edwin Brockway, and a glimpse of the Hudson river in the background.

The Climax Road Machine Company, Marathon, N. Y., has an original photograph of their machinery and two pretty landscape scenes—good roads machinery for the building of which they make a speciality.

We presume that any of our readers desiring any of these calendars may obtain same on request. Our own old and reliable slate calendar will be mailed to anyone who has been overlooked in the distribution.

TRADE LITERATURE.

THE OHIO CERAMIC ENGINEERING CO., Cleveland, Ohio, has out a new catalogue of steel cars. It contains illustrations of all manner of brick dryer cars and tells why their standard cars are superior in capacity, durability, etc. They also show a line of dump cars. Write for a copy, mentioning THE CLAY-WORKER.

THE CHICAGO BRICK MACHINERY COMPANY, Chicago, Ills., is out with what they term a supply catalogue, under which heading they include clay elevators, hand brick presses, clay gatherers, brick lifters, clay feeders, clay mixers, brick trucks, barrows, molds, grate bars and kiln castings, etc. They will send a copy to any clayworker who will favor them with his address.

THE YOUNGREN CONTINUOUS KILN, gas fired, is the title of a handsome catalogue containing illustrations of the Youngren kiln at Brooklyn, Ind., also sectional views with full descriptive text, letters of recommendation, etc. As the fuel question is paramount with clayworkers these days, the book ought to be prized by all. Copy can be had for the asking. Address P. L. Youngren, Milwaukee, Wis.

THE ERNEST WEINER COMPANY, railroad specialists for all industries, 66 Broad street, New York, N. Y., has favored us with their latest catalogue, which contains much valuable information touching on industrial and portable track railways, dump cars, dryer cars, etc., all of which are well illustrated. Those in the market for anything of this sort, see their ads on pages 170 and 193, are requested to write them for a copy.

"WONDER" BRICK MACHINERY is fully illustrated in catalogue No. 20 just issued by the Wallace Mfg. Company, Frankfort, Ind. Several sizes of the "Wonder" are shown, also "Wonder" cutting tables for both side and end cut brick, tile cutting tables, open and closed top pug mills, stone separating and clay crushers, disintegrators, dry pans and a general line of brickyard supplies. Write for copy, mentioning THE CLAY-WORKER.

COURSE IN CERAMICS is the chief consideration of Illinois University Bulletin No. 3. The objects and aims of the course are set forth fully, as are also the subjects of study, the requirements of admission, all of which is of peculiar interest to Illinois clayworkers just at this time. Copy of same together with any additional information wanted in regard to the new school for clayworkers can be had on application to Ross C. Purdy, Instructor in Ceramics, University of Illinois, Champaign.

THE WELLINGTON MACHINE COMPANY, Wellington, Ohio, is sending out their twenty-seventh yearly catalogue in which are shown their 1906 "Monarch" brick machine. From the list of users, it is quite evident that the "Monarch" needs no introduction to the brickmakers of the country. Their well-known "Quaker" machine is also illustrated, as is also a line of clay conveyors, clay crushers and disintegrators, brick trucks, sand molding machines, etc., some of which are also shown in their handsome color insert, pages 201, 202, 203, 204 and 205. They will be pleased to mail copy of their catalogue to any reader of THE CLAY-WORKER, who will express a wish for same.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Read at the Office and the Plant.

Editor Clay-Worker:

Enclosed find $2.00 for renewal of subscription to THE CLAY-WORKER. The regular arrival of the paper gives us new inspiration for the work at hand. We all read it in the office and then it does good work at the plant. Our business has been all that we could desire, in fact we have had an apportunity to cull the best of the business, which has been offered without our having to hunt it up. A. L. Converse.

Springfield, Ill., Dec. 26th, 1905.

Wants a Good Cheap Dryer.

Editor THE CLAY-WORKER:

Owing to shortness of season and the uncertainty of the weather in this district it is not profitable to try to dry any number of bricks in the open air. Am therefore anxious to construct a dryer, but the business does not warrant the installation of an expensive plant. Would greatly appreciate a few pointers as to what rate air should be passed through dryer at a given temperature to dry 12 to 15 thousand brick in 36 hours.

Our white clay is good, but we have a small amount of red on the surface which is very strong and has given trouble checking when exposed to the sun, and also crumbling in the kiln. Can this latter trouble be overcome, and would it be safe to dry such clay in 36 hours. Sand of the right color is very hard to get here, so we must do with as little as possible. We have both a soft mud and a wire cut machine.

E. T. O.

Will Put in Another Machine to Meet Growing Demand.

Editor THE CLAY-WORKER:

Enclosed please find my check for $2.50 for renewal of my subscription to THE CLAY-WORKER and also one of your pocket kits, which please forward to me at Orangeville, Md. I need not say how pleased I am with your journal, which I peruse monthly with the greatest interest. It seems to me that it is an indespensable adjunct to every brickmaker's library, and what more could be said? As to business I am glad to say that were my manufacturing capacity thrice as great as it is now, I could dispose of every brick I could then make. As it is, with an annual capacity of 8,000,000 to 9,000,000, I have every brick sold ahead, and am declining orders daily for more than I am really selling. Indeed, my constant refusal of orders has compelled me to think seriously of increasing my capacity, and to that end I shall most probably put in a Martin machine during the coming winter.

Orangeville, Md. F. D.

Trade Schools In St. Louis.

Editor THE CLAY-WORKER:

In our burg the trades unions are very antagonistic to the allowance of apprentices, aiming in this way to control the labor supply in their particular lines for the future by limiting the number of workmen.

This arbitrary ruling has had the effect of encouraging the so-called trade schools where the pupil has opportunity of learning the details of each branch in which he may be interested.

The first of these trade schools was a so-called barber cottage where gentlemen are taught the barbers trade and ladies are taught hair dressing, manicuring, facial massage, chiropody and electrolysis. Their phenomenal success has induced others to embark into similar enterprises as relates to the building trades industry and we now have a plumbing school, a school for paper hanging, painting and decorating and lastly a bricklaying school. At all of these schools the practical part is thoroughly taught and opportunity is also given to learn drafting and estimating from drawings. Being a brickmaker, I took the time to investigate the bricklaying school and found there some of the finest and best specimens of bricklaying being carried out by some of the pupils which would compare very favorably with the work of the best experienced mechanics. All that these students require is opportunity for practice but the rulings of the union bricklayer forbid that.

Apparently the open shop is the only thing needed to give these new school bricklayers an opportunity to ply their trade. This open shop policy is surely due in our town in comparatively a short time, for the bricklayers will not work with non-union workmen and these young trade school graduates will not be admitted to the union.

The establishing of these trade schools is undoubtedly good policy, and other cities will do well to establish them and thereby in a measure supply good mechanics to overcome existing shortage of mechanics in the building trade lines. That there is a shortage is proven by the want ads that appear in our daily papers. May the schools increase is the wish of AN OLD WORKMAN.

St. Louis, Mo., December 8, 1905.

Greeting From Chicago.

MY DEAR RANDALL:

While confined to my sick room so many evidences of love and thoughtfulness came to me from members of the N. B. M. A. that deserves acknowledgment, that I have thought it best to make it through the columns of the official organ of the Association.

I am very thankful to have lived nearly sixty-five years without a serious illness. The nearly eight weeks that I was kept in doors was a season of reflection and renewed thankfulness that I am still on deck. One needs such an experience to appreciate friends, and not the least of these is the dear wife, who never once wearied in her efforts to ease the pain or make the days or nights more comfortable. It will be a long time before I am fully recovered but with splendid general health, a good appetite and whole nights of refreshing sleep, I shall be content with present conditions for a good while. I am barred from any violent exercise, must not run or lift any heavy article, and be guarded against exposure. Am prohibited from taking any form of alcohol into my system. Only one of my vices is left to me. The dear doctor decided that as I had smoked tobacco for nearly fifty years, it would be more injurious for me to quit than to keep on. So it may as well be understood among my gentlemen friends that a good cigar still goes with me. Just as soon as I get strength sufficient for the effort, my good "nurse" and I will hie away to some place where it is warm and pleasant and this is one of the hard things to me. I missed the annual gathering of so large a proportion of my friends at Birmingham and have looked forward to a renewal of these friendships at Philadelphia with a longing desire, and now to have it made plain that it would be dangerous for me to risk leaving a warm climate in the dead of winter for such weather as is possible in Philadelphia, is a very great disappointment to me. Have I said enough about myself? This winter will see me absent for the first time from the annual meeting of either of the brick companies with which I have been connected but in common with most brick manufacturers in the year of our Lord, nineteen hundred and five, I have nothing to worry about. The prospects of the coming year look to be very promising, and I predict a greater prosperity than in last year. Such glorious crops as the country is blessed with can not help but be blessings in store for the future.

Faithfully yours,
D. V. PURINGTON.

Sand-Lime Association Report.

Editor Clay-Worker:

There seems to be a wrong impression in the minds of manufacturers of sand-lime brick as to the attitude of the Association in reference to publishing the papers and discussions which were presented at the convention in Detroit.

It was decided by the Association that, in view of the fact, much money had been spent in accumulating data, in getting professional services, and for making experiments, it would not be fair to have this published in the trade journals giving the public the benefit. It was, therefore, determined that the proceedings should be printed in full in book form and distributed among the members of the Association only. Therefore, anyone who wishes to avail himself of this valuable material can do so by becoming a member of the Association.

The initiation fee is $5, the annual dues are $5, and for the year 1906 there is an additional assessment of $30, making the total expense of becoming a member, $40. This is an exceedingly small cost for the amount of information furnished. Several members have already told me that the information they obtained at the meeting showed them where they had been making some serious mistakes, and would be a saving to them of at least several thousand dollars. This is the case, no doubt, with a great many members It would be ridiculous to assume that there are any of us who cannot learn something new that is of value in the manufacture of sand-lime brick. If we can be working together and help each other out at a small annual cost of $30 or $40, it certainly is a mistake for us to try to work out our own problems independently at a much greater cost.

Many manufacturers of sand-lime brick who have visited me have stated that, if they had had someone to give them the information that they now possess, when they started, they would have been able to save a good deal of money; and instead of merely paying expenses they would have been in a position to pay dividends.

Very truly yours,
Wilmington, Dela., Jan. 12, 1906. H. O. Duerr, Sec'y.

Notes From Tide Water, Va.

Editor CLAY-WORKER:

Tide Water, Va., is to have two new brick plants this year. One by a New York firm, the other by Ohio capitalists. In a letter from each concern, they advised me they would locate here this spring, they are looking for a big demand for brick on account of the Jamestown Exposition, in 1907. The present yards in Tide Water, Va., are more than equal to the demand even if the demand should increase 50 per cent.

G. B. Wood, of Emporia, Va., has shut down his yard for the winter with a good stock of brick on hand, also the D. C. Harrell & Co's plant in Suffolk, all the Norfolk yards have closed down for the winter except E. W. Face & Son. They expect to run the best part of the winter. The Suffolk Clay Co's. plant is running now, but may close down some time this month on account of over stock, they have over one million in stock now, and very poor demand. The West End Brick Co's. plant has been closed down for over a month.

W. L. Jones, of Williamsburg, Va., is offering his brick plant for sale. This plant is located about sixty miles from Norfolk on the river.

The Standard Brick Co., of Norfolk, are offering their brick plant for sale. This plant is located twenty miles from Norfolk, on Southern Ry.

The New Tide Water R. R., which is now building, will benefit the brick makers but very little. They expect to use concrete exclusively in all their bridge and culvert work. In culverts from five feet down, they are using cast iron pipe.

Mr. Chas. Parker expects to start a small yard near Franklin, Va., this spring.

Geo. Brooks will start a new brick plant this spring at Richlands, Onslow Co., N. C. In an interview with him a few days ago he said he had bought an E. M. Freese machine and automatic cutter.

Mr. C. W. Darden will put in new brick plant this spring at Isaacs, Va., his address is Franklin, Va.

Franklin, Va., is to have a sand-lime brick plant this year. Mr. P. D. Camp, of the Camp Mfg. Co., is the promoter. They have already had samples made from their sand, and the brick are said to be very fine.

Although the past year has been the most prosperous one in the building line Norfolk has ever experienced, prices have been very low, on many jobs mercantile brick were delivered at buildings for $6.50 per thousand; some as low as $5.25, F. O. B. cars at building, present prices range from $6.50 to $7.50 delivered at building. The brick must be piled, not dumped.

H. L. J.

TRADE NEWS ITEMS.

The Whitewater Brick and Tile Company is a new concern recently incorporated at Whitewater, Wis., by F. H. Kiser, W. H. Francis, Z. P. Beach and F. A. Moore. The company is capitalized at $80,000.

S. L. Bray, superintendent of the Washington Pottery Company, Washington, Mo., writes that they will erect a new plant in the spring for the manufacture of white stone ware, and flower vases.

The plant of the Dickinson Press Co., Dickinson, N. Dak., was partially destroyed by fire early in the morning of January 2nd, entailing a loss of $3,000. They will rebuild at once and be ready for operation early in the spring.

The Pettyjohn Company, manufacturers of hollow concrete building block machinery, at Terre Haute, Ind., has recently purchased a site on which they have erected a factory, constructed of blocks made on their machinery. They are now installing automatic machinery which will facilitate their work materially. They say they are receiving on an average of one testimonial letter a day from satisfied users of their machinery.

"Messrs Brigham Bros., Kingston, N. Y., have placed their order with the Henry Martin Brick Machine Mfg. Company, Lancaster, Pa., covering two of the latest improved "Martin" style "A" brick machines, having two mold entrances, fitted up with pug mills, elevators, etc., also their order covering one (1) 5-ft. dry pan, and the latest improved "Martin" steam brick dryers of 100,000 capacity, including the "Martin" latest improved cable delivery system."

Elliott Johnston, proprietor of the brickyard at Granger, Wash., has formed a partnership with his brother A. W. Johnston under the firm name of Johnston Bros. The plant will be greatly improved and the capacity increased by the installation of up-to-date machine. The demand for brick the past season in that section has been unprecedented, and Johnston Brothers expect to be ready for the demand the coming season. They have already booked a number of orders for spring delivery.

DEATH OF ISAAC HARDY.

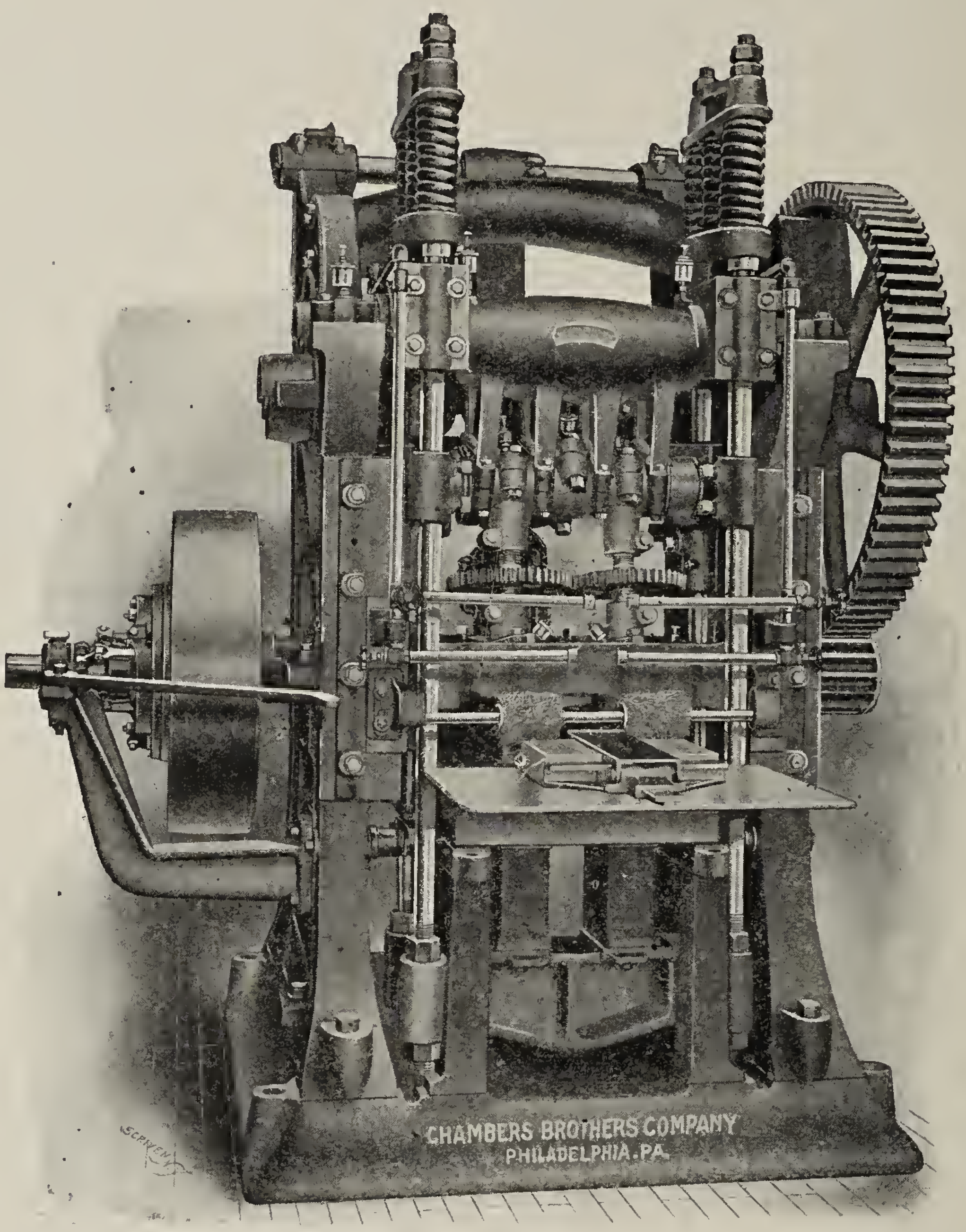
We are just in receipt of a letter from I. E. Hardy, Momence, Ill., advising us of the death of his father, Isaac Hardy, of Worksop, England. Mr. Hardy resided in this country for a number of years and had many friends here who will learn with regret of his demise. He was an expert in the line of enameling and glazing and a number of firms owe their success in this line to Mr. Hardy. He had been a member of the National Association for many years and continued his membership even after he had returned to his native land.

Room for Another Repress?

TRY ONE OF OUR MAKE.

Weight about 11,000 lbs.

Capacity, 2,000 bricks per hour.



Single Crank Movement.

Working Machinery All Above the Mold Box.

THE PHILADELPHIA REPRESS

Built by

CHAMBERS BROTHERS COMPANY,

Fifty-Second Street, Below Lancaster Ave., PHILADELPHIA, PA.
E. R. FRAZIER, Chicago Agent, 59 West Jackson Boulevard.

CHAMBERS
BRICK
MACHINERY

End Cut and Side Cut

Auger Brick Machines

Automatic Cutters

Single and Double Shaft Mixers

Clay Disintegrators and Crushers

Dry Pans Clay Elevators

Granulators and Feeders

FULL GUARANTEE AND TRIAL

Chambers Brothers Company
PHILADELPHIA, PA.

1858 Continuously at it 1906

Written for The Clay-Worker.

WESTERN PENNSYLVANIA BRICK AND BUILDING NEWS.

A CAREFUL canvass among the brick manufacturers of this city to ascertain the actual condition of business in the industry here, and to get the views of authorities on the apparent prospects for the ensuing year, gives the authority for summing up the conditions as follows:

Fire Brick.

The demand from local concerns has been considerably greater during the year just closed than it was during 1904, and the leading manufacturers claim that the outlook for the coming year is even brighter than it was last year. Last year, the iron and steel market was unusually brisk, and there was a great deal of new construction and lining in the local steel mills. This was, of course, very good for the fire brick manufacturers, as an order for a new lining for a single blast furnace will mean a shipment of from six to fifteen cars of brick. The announcement has already been made that the United States Steel Corporation will greatly enlarge its plant at Homestead, and work will be started within the next week or two. This will mean a contract of considerable magnitude for the successful bidders for the fire brick for the new blast furnaces, stoves, open hearth furnaces and converters. The Jones and Laughlins Steel Company will also be heavy users of this kind of brick in the new mills and furnaces that they are now constructing in this city and vicinity.

During the year, prices were well maintained, and in many cases, good advances were noted, but collections during the greater part of the year were rather slow.

Red and Building Brick.

This branch of the industry also shows considerable improvement in the past year over the previous year. This was due principally to the immense amount of building that was done in the entire Pittsburg district during the year just closed, and there appears to be but little cessation in the amount of new construction that is still going on, even though we are now in the middle of winter.

There is at the present time an excellent demand, and all plants are running full time, with many orders booked ahead. The Pittsburg Association represents 27 plants, and the yearly output is about 125,000,000 brick, of which approximately 75,000,000 are used in this immediate district, the remainder being used in outside markets. In Allegheny County, there are about 45 plants, with a total capacity of 200,000,000 brick per annum, and giving employment to about 40 men each. The majority of this product never leaves the county, and frequently outside product must be brought into the county to supply the demand.

Prices have advanced during the year, having ranged from $6.25 to $7.00 in 1905, while in 1904, the range was from $5.75 to $6.00.

Fire Proofing.

Trade in hollow blocks and fire proofing materials has been exceptionably good during the past year. Pittsburg, as the world well knows, practically controls the manufacturing market of this class of material, and furnishes a large proportion of the product used throughout the country. The demand has been unusually strong, due principally to the increased construction of office and other fire proof structures all over the country. During the past year, the contracts handled have been the largest in the history of the business, and the outlook for the coming year is exceptionally bright.

The plant of the American Sewer Pipe Company, at East Liverpool, Ohio, was completely destroyed by fire last week, entailing a loss of about $80,000. There was a large supply of raw material on hand which was not seriously damaged, however, and the company expects to rebuild the plant in the near future.

The Rosslyn Brick Company, of Pittsburg, reports that their works at Carnegie, Pa., are running to the full capacity, and that they have enjoyed a very prosperous year. They have a number of large orders with which to start the new year, and anticipate a very busy season in the building and paving lines. A number of improvements will be made in the mechanical equipment that will materially increase the output for 1906.

The Westmoreland Brick Company, with offices in the Second National Bank Building, Pittsburg, reports that business during the last year was very good, and that the outlook for the coming year is better than it has been for several years. The Westmoreland Brick Company started on the first of the present year to conduct their business as an incorporated company, their charter having been granted on July 7, 1905, and to take effect on January 1, 1906. The officers of the company are James H. Willock, president; Add H. Leitch, general manager; Frank S. Willock, treasurer and John C. Leitch, general agent. There will be considerable new machinery installed in the works during the coming year, and improvements of all kinds made as demand requires.

The Harbison-Walker Refractories Company, with general offices in Pittsburg, have had a very encouraging year, and have made many improvements at their various plants in this vicinity, as well as the plants located up in the country. Their plant at Hays Station, a few miles from Pittsburg, is now one of the finest and most complete fire brick plants in the entire country, and from the view-point of capacity, it is believed to be the largest.

Gustav J. Cohn, Julius A. Cohn, Frank McIlvaine, S. H. Hale, P. M. Smith and W. A. Sneidiker have incorporated, with a capital of $25,000 under the firm style of The Vulcan Clay and Brick Company, of Wellsville, Ohio. A general manufacturing business will be conducted.

Pittsburg, Pa., Jan. 9, 1906. F. A. C.

Written for The Clay-Worker.

NORTHERN OHIO BRICK AND BUILDING NEWS.

TOLEDO BRICK YARDS have a total of about 15,000,000 brick on hand, a decrease of about 3,000,000 since a month ago. Of this amount, the nine plants of the Toledo Brick Supply Company have 14,000,000, while the two independent plants and the one operated by the Toledo Workhouse have a total of about a million. The Workhouse plant has a stock of only 150,000 merchantable brick, the two independent plants each reporting about a half million bricks still on hand. Granting that two plants, those of the Findlay Hydraulic Pressed Brick Company and the Ohio Brick Company, will be kept running throughout the entire winter season, and further granting that the ratio of decrease per month will average about 3,000,000, Toledo yards will have but a very few million bricks on hand by the time new brick are ready for market.

Toledo has a wonderful building record for 1905, City Building Inspector, John W. Lee, reporting that the improvements for the year total $6,004,533 against $1,960,297 for 1904. The number of permits was 1,169, or only 78 increase over 1904, but it was the character of the buildings that swelled the valuation. During the year, 964 single dwellings were erected. As previously stated in another communication, Toledo is flat crazy, the truthfulness of this statement being found in the number of flat structures which were erected during the year, just 49 with the total capacity for housing nearly 300 families. During 1904, 15 flat buildings were erected, while of dwellings, only 688 were built. While the permits for the past two years number nearly the same, the total valuation for 1905 is about 70 per cent. greater than for 1904.

"It is a little too early to speak of the prospects for the coming season," said W. O. Dakin, secretary and treasurer of the Toledo Brick Supply Co., "but the situation looks good anyhow."

Outside of the Collingwood Brick Co., which will have to remove from its old location by the end of the year to its new plant at the intersection of the Michigan Belt railroad and Stickney avenue, Toledo brick concerns are pretty well situated for clay supply for years to come. A. E. Macomber & Co., have enough clay at their present location to last them for the next twenty years; H. C. Ellis has enough for fifteen years; the J. B. Fox Brick Company has sufficient for ten years more; the Ohio Brick Company for twenty years; the Northern Brick Co. for a period of seven years; the Findlay Hydraulic Pressed Brick Co. for from 7 to 10 years; Spear & Clark for eight years, with privilege of renewal, which will afford clay for twenty years; the Kohler Brick Company for from eight to ten years; F. E. Tracy for several years; L. Burkhardt for four or five years. T. O. D.

BOOKS FOR CLAYWORKERS.

Bricks, Tiles and Terra Cotta, by Charles T. Davis. Price $10.00.

A Treatise on the manufacture of brick, tiles, terra cotta, etc., including common, pressed, ornamental and enameled brick, drain tile, sewer pipe, fire clays, fire brick, terra cotta, roofing and flooring tile, etc., comprising every important product made from clay.

The Brickmakers' Manual, by R. B. Morrison and J. A. Reep. Price $3.00.

An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

Sixty Years a Brickmaker, by J. W. Crary, Sr. Price $2.50.

A practical treatise on "Brickmaking and Burning," and the management and use of different kinds of clays and kilns for burning brick, with a supplement for beginners in brickmaking, and hints to bricklayers and builders.

Clay Glazes and Enamels, by Henry R. Griffen. Price $5.00.

With a supplement on "Crazing, Its Cause and Prevention," giving full instructions for glazing and enameling brick, terra cotta and pottery, including exact recipes and formulas for all the principal colors now in use, and also instructions for their preparation and application.

Vitrified Paving Brick, by H. A. Wheeler, E. M. Price $1.00.

A review of present practice in the manufacture, testing and uses of Vitrified Paving Brick.

Tables of Analyses of Clays, by Alfred Crossley. Price $1.00.

Including analyses of chemically pure clays, well-known common and pressed brick clays, paving brick clays, fire clays, shales, etc., both in this country and England. A valuable book for those desiring to compare their clays with other well-known and standard clays.

Burning Brick in Down Draft Kilns, by W. D. Richardson. Price $1.00.

A manual on the "Burning of Brick," covering all the essentials of good burning, including chapters on kiln repairs, stages of burning, oxidation period, vitrification period, cooling, with valuable tables and illustrations of various testing apparatus.

Kiln Records, by W. D. Richardson. Price $1.00.

To establish a successful system of burning, observations and records should be made regularly, carefully and conscientiously, and this can be done to best advantage by the use of Mr. Richardson's Kiln Records.

Engineering for Land Drainage, by C. G. Elliott. Price $1.50.

Giving instructions for laying out and constructing drains for the improvement of agricultural lands, intended for the use of those who are charged with the responsibility of making plans for and executing drainage improvements.

Bricklaying, by Owen B. Maginnis Price $1.50.

This book contains extensive explanations of the most approved modern methods of bricklaying, and is the current practice and experience of the best authorities, making an invaluable work of reference for architects, engineers, contractors, builders and mechanics.

These Books will be Mailed, Postage Prepaid, to Any Address in the United States or Canada, on Receipt of Price.

T. A. RANDALL & CO.,
Indianapolis, Ind., U. S. A.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.

THE EXACT figures relating to the building industry of the past year are not obtainable at this time, but the evidence at hand would indicate that the percentage of increase in brick buildings for the year 1905 over the preceding year is greater than it has ever been before.

The brickmaking industry on the Pacific coast has made greater advances during the past year than during any five years previous thereto. Financially also the year of 1905 has been a successful one for the brick people, though it is not likely that their dividends have been large, as the amounts invested in improvements at the various works have been enormous. There are now factories operating on the Pacific Coast, whose output, while not of so great magnitude as that of some of the large Eastern factories, nevertheless, contains almost everything known to the clayworker's art and is of a quality not excelled anywhere.

The Rose Fire Brick Company started the manufacturing of magnesite fire brick early in December, but owing to some unforseen disasters for which they were in no way responsible they have been obliged to shut down temporarily pending the settlement of the difficulties. The greatest difficulty which they have encountered so far, is in getting magnesite from the mines of the American Magnesite Company, who furnish the raw material for their factory. Before the magnesite can be loaded on the train for shipment to the factory, it is necessary to haul it thirty miles and this is done by means of traction engines. The difficulty mentioned does not lie so much in the plan of moving the magnesite, as in the fact that the company which does the hauling is not more rigidly bound by contracts, so that they must deliver a stipulated amount of magnesite at the railroad ready for shipment or forfeit their contracts.

Before the shut-down, operations had progressed far enough to enable them to see that their product would come fully up to their expectations for it, quite a number of finished brick having been turned out. Mr. Rose is now in the East, having taken with him samples of the work done by his Oakland factory to exhibit in the Eastern cities.

The Wheeland Brick Company, of this city, was paid a high compliment recently by the Board of Trustees of Stanford University, when they issued a statement which appeared in one of the San Francisco newspapers in which they very highly indorsed the Wheeland Brick Company, commending them especially for the admirable manner in which they had lived up to their contracts for furnishing the brick used in the buildings of the University. The number of brick used in filling the contract was in the neighborhood of 18,000,000, and the period of time which elapsed during the filling of the contract was three years, and during that time not one brick was rejected and not one complaint was made either by contractors, architects or by the University. In fact, so complete was the satisfaction given, that the trustees of the University who are about to make appropriation for more buildings passed a resolution that before asking for bids for the furnishing of brick for the new buildings, they offer to allow the Wheeland Brick Company to renew its former contracts with them.

The California Brick and Pottery Company is contemplating commencing the manufacture of fire brick in the near future. Experiments made with their clays show that they are capable of being made into fire brick of a high order of efficiency.

The Patent Brick Company is constructing a large new dryer. They also have complete new brickmaking machinery for their plant now in transit, which will be installed immediately upon its arrival.

Elsa Simand, manager of the Remillard Brick Company's plant near Pleasanton, Cal., died at his home in that city, on Dec. 22d.

E. W. Baker, of Los Angeles, and W. H. Dexter, of Washington, have been investigating the practicability of establishing a pressed brick and cement product plant at Oroville, Cal.

The Spokane Pottery Co., of Spokane, Wash., has bought the plant of the Standard Stoneware Company, at Clayton, Wash.

The Denny-Renton Clay Company, of Seattle, Wash., is expending $200,000, for improvements on their several plants. They have just completed a factory at Van Asselt, 80x120 feet. It is equipped with terra cotta machinery of the most modern type. The cost of this factory, including the machinery, is about $125,000.

John Liemkuhler, of this city, has associated himself with Mr. Morgan, of Los Angeles, for the purpose of conducting a large brick yard near Santa Fe Springs. The concern will be known as the Santa Fe Brick Company. The machinery will be most modern throughout, and have a capacity of 46,000 bricks per day.

Sunset.

San Francisco, Cal., Jan. 5, 1906.

TO PHILADELPHIA

From all Points West of the Mississippi the Rock Island System is the Most Convenient Route to take to the "Quaker City."

With its four Eastern Gateways: Chicago, Kansas City, St. Louis and Memphis, and its "Airline" Routes leading up to those points, the Rock Island serves the great Middle West as does **no other road.**

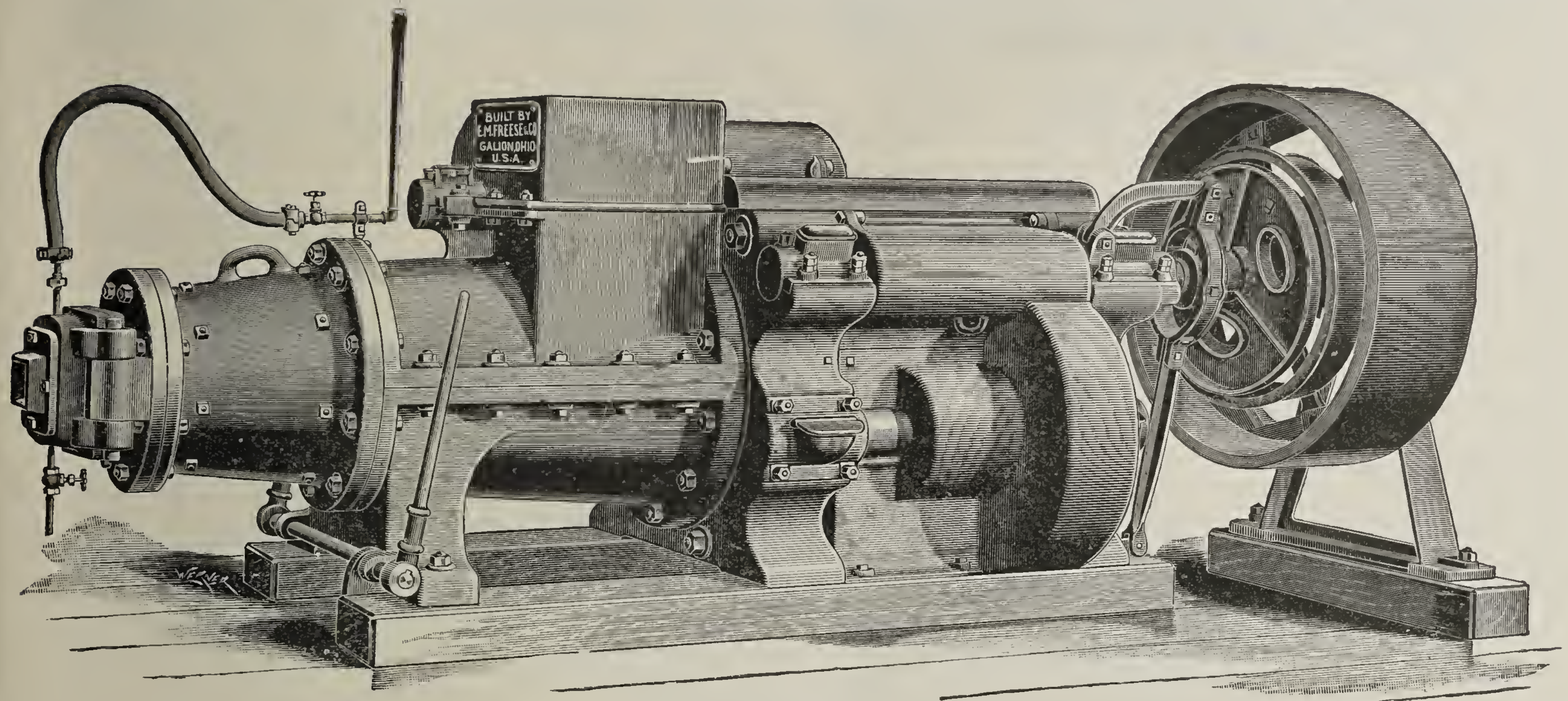
In all the four gateway cities it enters Convenient Stations, centrally located, and in the case of Kansas City and St. Louis it enters the same stations that **all other** lines enter.

Rock Island System

Reduced Rates over the Rock Island whenever you find them over any line. Time Table with map and any information promptly on request.

JOHN SEBASTIAN,
Passenger Traffic Manager,
CHICAGO.

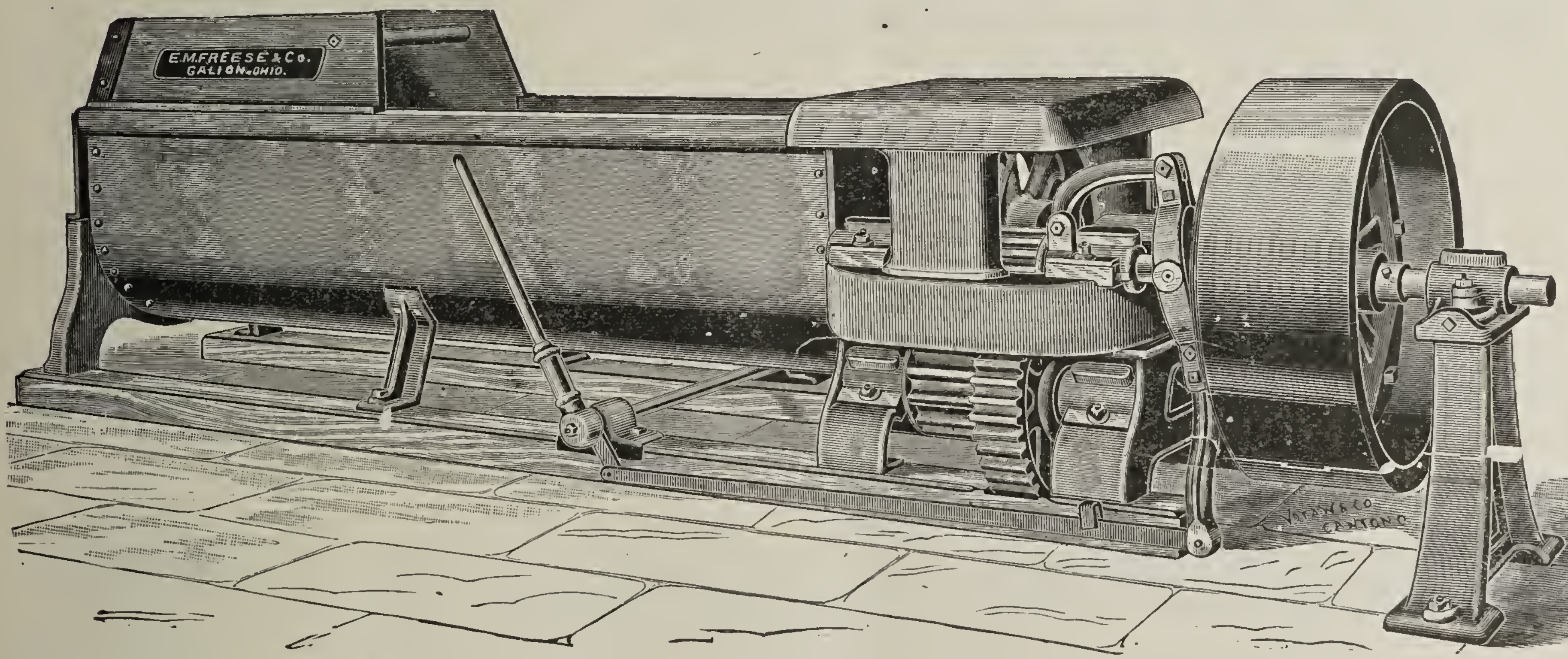
Our Mammoth Brick Machine



THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

* * *

Our Pug=Mills Have Features of Great Merit.

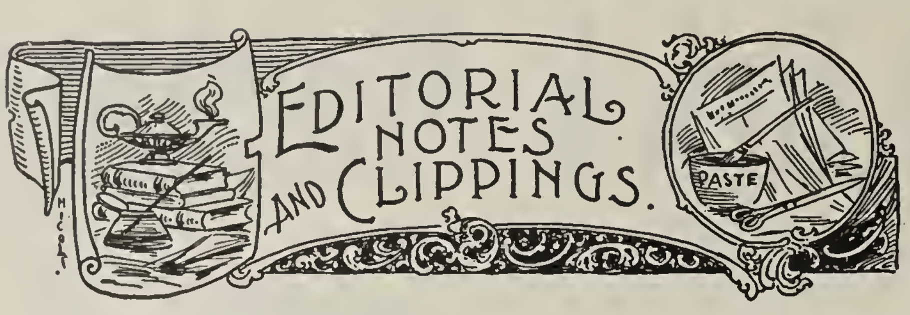

E.M.FREESE & Co.
GALION, OHIO.

THESE PUG=MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitetd for making a fine quality of brick.

E. M. FREESE & CO., = = Galion, Ohio.

Mention the Clay-Worker.

See Ads on Pages 250 and 251.



EDITORIAL NOTES AND CLIPPINGS.

L. L. Stair contemplates establishing a brick plant at Newburg, N. D.

The Jenkins Brick Company, of Wetumpka, Ala., has filed articles of incorporation with a capital stock of $75,000.

As a result of a cave-in at the plant of the Omaha (Neb.) Hydraulic Press Brick Company's plant recently one man was killed and another man suffered a broken leg.

The Killian (S. C.) Fire Brick Company has reorganized with a capital of $25,000. The officers are: T. M. Waring, president and treasurer, and H. T. Hayne, secretary.

The Denison & Sherman Pressed Brick Co., of Denison, Texas, has been incorporated with $20,000 capital stock. The incorporators are R. E. Kreuger, John Windsheimer and J. E. King.

The Delaware Clay Mfg. Co., at Delaware, Ohio, was entirely destroyed by fire recently, entailing a loss of $40,000. The plant was owned by Denison Brothers, and will probably be rebuilt at once.

"The Schneider Brick Company, of Detroit, Mich., has placed orders with the Henry Martin Brick Machine Mfg. Company, of Lancaster, Pa., covering the latest improved "Martin" system of handling and drying soft mud brick, of 35,000 daily capacity."

W. J. Carmichael, formerly with the Huennekes Company, has become associated with the American Clay Machinery Company, with headquarters at Willoughby, Ohio, where, he writes us, the latch string will always be on the outside for all the clayworking fraternity.

The Iron Clay Brick Company, of Columbus, Ohio, of which D. C. Meehan is the president, has been reorganized with $300,000 capital stock, by W. D. Brickell, D. C. Meehan, Allen R. Rapp, C. J. Neare and G. J. Marriott. The plant will be enlarged and the output increased.

Hervey Haigh the continuous kiln builder at Catskill, N. Y., writes that he has had a very prosperous season. He has built three of his kilns this past year and has three more in course of construction. Among those built is one at the plant of the Wolf Brick Co., Detroit, Mich., which is giving the best of satisfaction.

The Macon (Ga.) Brick Co. write that they are in the market for a second hand 100 to 125 horse power engine and 150 horse power boiler, and a stiff mud brick machine of 50,000 daily capacity. They must be in first class condition. If they can not find a second hand outfit that suits them, they will buy a new one.

The Townsend Brick & Contracting Company will install a new drying system at its plant at Zanesville, Ohio. This new system is a great improvement over their old one, and will enable the company to greatly increase its capacity. Rufus C. Burton, the manager of the company, announces that they expect to have the dryer in operation by early spring.

At a recent meeting of the directors of the Karthaus Fire Brick Company, Karthaus, Pa., it was decided to move the office of the company from Lock Haven, Pa., to Karthaus, and D. I. McNaul was elected secretary and treasurer of the company to fill the vacancy caused by the resignation of P. L. Knecht who had served in that capacity since the organization of the company some fifteen months ago.

There was a change January 1, in the ownership of the Solfisburg Brick Works, Aurora, Ill., which had been conducted by Christian Solfisburg for nearly forty years, up to the time of his death a few months ago. The plant has been practically in the hands of Albert C. and Lincoln Solfisburg, who assumed active management and full control of the works, beginning with the new year.

The plant of Fiske & Co., at Dover Point, N. H., is now being overhauled with the intention of resuming operations there in the early spring. The old kilns which were not adapted to the burning of New England clays will be removed and new ones will be erected. A number of additions will also be made to the machinery equipment of the plant.

The Johnston Brick Company, of Kingston, Ohio, has filed incorporation with capital $10,000, consisting of 100 shares of the par value of $100 each.

Henry Peckman, a well-known brick manufacturer of Greenock, Pa,. died at his home in that town, January 4, in his sixty-fifth year. He left a wife, five sons and one daughter.

The plant of the Gleasonton Brick Works at Lock Haven, Pa., which has been idle for five months, commenced operations January 8, and will not be run to its full capacity of 25,000 per day from nowon.

The Saco Brick Company has been organized at Biddeford, Maine, for the purpose of manufacturing brick, tile, drain pipe, etc., with $50,000 capital stock. John Hearne, Saco, is president and James H. Durgin, of Saco, is treasurer.

On the evening of January 10, Miss Fannie Berry, daughter of Mr. George O. Berry, the well-known brick manufacturer of Columbus, Ga., was united in marriage to Mr. Franklin E. Lummus. We extend to the young couple our sincere congratulations.

August J. Muller advises us that he has formed a company for the erection of a brick plant of 30,000 daily capacity, at Washington, La., and that he will be glad to hear from manufacturers of clayworking machinery and appliances, kiln and dryer builders, etc., etc.

R. G. Eisenhart, president of the Horseheads Brick Company, Horseheads, N. Y., recently booked an order for 7,000,000 brick to be delivered in New York City. Despite the fact that this will keep the plant busy for a couple of months or more, Mr. Eisenhart will find time to attend the coming convention at Philadelphia.

The Katterjohn Brick Company, Paducah, Ky., has filed articles of incorporation, capitalizing at $50,000. The company will do a general brick business, it being simply the old Katterjohn, interests incorporated. The officers are H. W. Katterjohn, president, George Katterjohn, vice-president, and H. A. Katterjohn, secretary and treasurer.

Frederick G. Bogk, secretary and treasurer of the Ricketson Mineral Paint Works, Milwaukee, Wis., writes that they are feeling good over the receipt of a diploma from the St. Louis World's Fair for the highest award on their mortar colors and mineral paints, in spite of the fact that the diploma was a long time coming.

The Bradley Brick Company has leased an additional tract of land near their plant at Mooresville, Ind. This will give them a supply of shale sufficient to last them for years to come, and the plant will be enlarged and improvements made to enable the company to run the year through, instead of just in the summer months, as heretofore.

The Auburn Shale Brick Company, Auburn, Pa., has purchased a tract of land at Schuylkill Haven on which they will erect a brick plant of 50,000 daily capacity. They are now turning out 25,000 daily at their plant at Auburn, but the demand for their brick is growing to such an extent that they feel justified in building an additional plant.

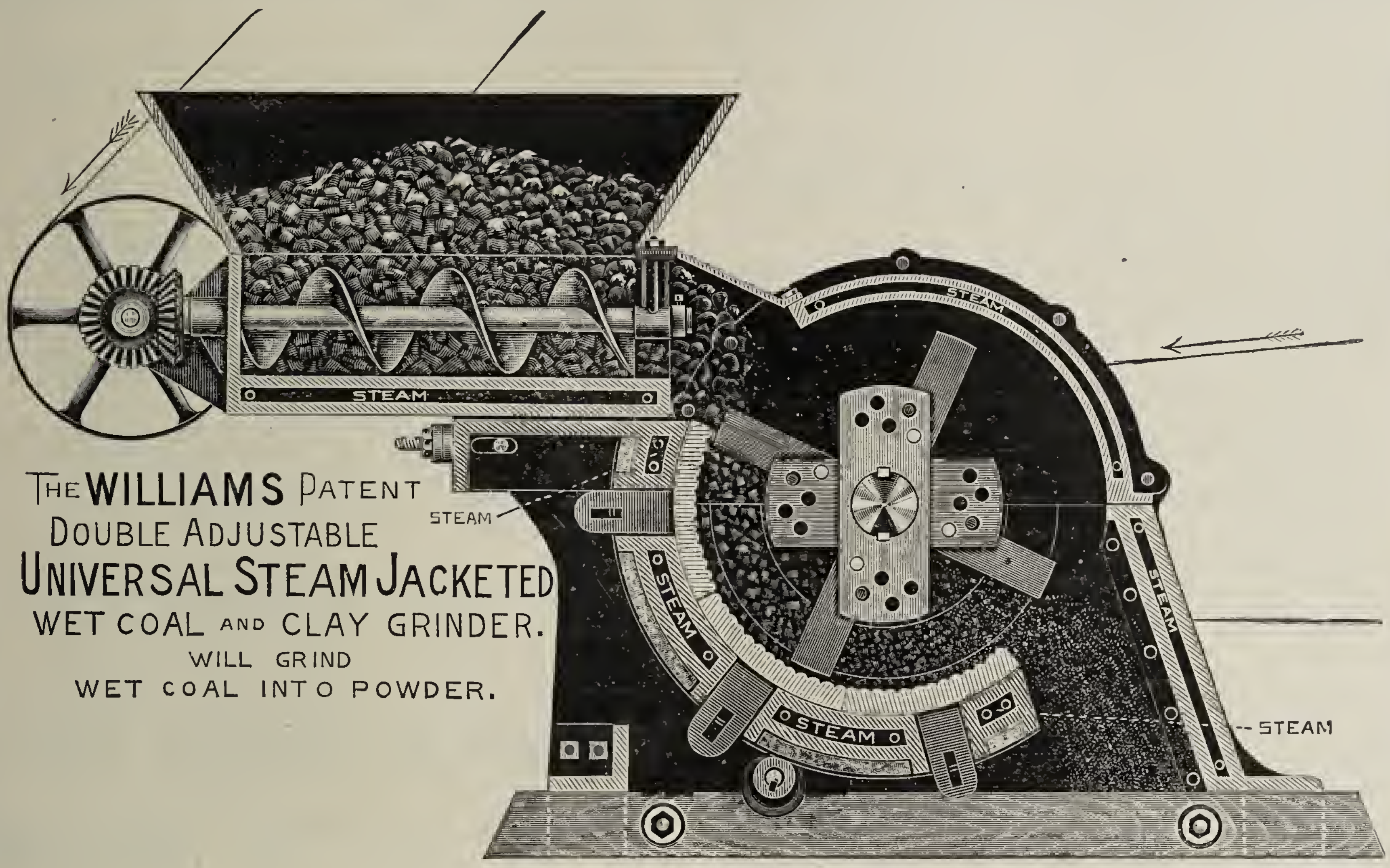
The Grinnell Brick and Tile Company is a new concern recently organized at Grinnell, Iowa. C. A. Smith, secretary of the company, writes, "We will put up an up-to-date plant, and will be glad to receive propositions from firms furnishing brick machinery and supplies. We only have a surface clay, but want a first-class equipment just the same."

The brick manufacturers in the Kansas gas belt held a meeting recently at Independence, at which the following officers were re-elected: President, J. J. Amos, Humboldt; vice-president, R. Nesch, Pittsburg; secretary, E. R. Dick, Coffeyville; treasurer, A. W. Shultis, Independence; executive committee, J. J. Amos, E. R. Dick, E. R. Dickinson, Cherryvale; B. E. Lu Dow, Fredonia; A. C. Stitch, Independence; F. E. Schumard, Cherryvale.

The Glasgow Brick Company, at Glasgow, Ky., was incorporated January 1st, with a capital stock of $10,000. The members of the Vaughn & Boucher Brick Mfg. Co., are the principal stockholders, and the members of the latter firm will continue as active managers of the incorporated company. The officers are John Vaughn, president, W. E. Boucher, general manager and secretary and E. Y. Kilgore, secretary. The company will add to its present facility and

[Continued on page 152.]

For Any Kind of Clay—
Wet, Dry or Stony.



THE WILLIAMS PATENT
DOUBLE ADJUSTABLE
UNIVERSAL STEAM JACKETED
WET COAL AND CLAY GRINDER.
WILL GRIND
WET COAL INTO POWDER.

For the past 18 years we have been making a study of an all around universally adapted clay disintegrator. We now have it beyond a question of doubt. It is ready for the market.

Please write the

Williams Patent Crusher and Pulverizer Co.,

St. Louis, Mo. U. S. A.

Total Number of Machines Shipped to Date Over 1,000.

EDITORIAL NOTES AND CLIPPINGS—Continued.

manufacture brick on a larger scale than ever before, and will also add to their work, the manufacture of drain tile.

Wilson Bros., Hazel, Ky., write that they are in the market for some second hand brick machinery, including a repress.

The Hendricks Brick Company, East Kingston, N. Y., has been incorporated by C. P. and Maria V. Hendricks, of East Kingston, and F. P. Luther, of Kingston, with $50,000 capital stock.

The Saginaw Paving Brick Company, Saginaw, Mich., has recently purchased an additional tract of land, comprising thirty acres, adjoining their plant on which they will erect new kilns, etc.

Daniel Robinson, a veteran brick manufacturer of Chester, Pa., died at his home in that city, December 18th. Mr. Robinson had been in the brick business since 1875. He leaves a wife and three children, two daughters and one son.

A new firm has been incorporated at Montreal, Canada, to be known as the St. Lawrence Pressed Brick Company, with a capital stock of $300,000. A plant up-to-date in every particular will be erected without delay, and will be ready for operation in the early spring.

F. H. Meiers, of the St. Anne Brick and Tile Company, St. Anne, Ill., writes that they had a good trade last year, and with the prospects for a still better season ahead of them, they will enlarge their plant to enable them to turn out 10,000 4-inch tile per day.

The Middleton Clayworking Company, Ltd., has been organized at Middleton, Novia Scotia, with $10,000 paid up capital stock. The officers of the company are W. B. Ross, Halifax president and L. E. Shaw, Middleton, secretary and treasurer. They will make building brick and drain tile.

W. F. Keates, is at the head of a company at Hot Springs, Ark., that will erect a plant at that place for the manufacture of vitrified, dry press, enameled and glazed brick and tile, art pottery, etc. They have 118 acres of fine clay land within a mile of the city. The clays have been tested with excellent results.

J. W. Arbuckle and Wallace Morgan, of Rushville, have purchased one-half interest in Madden & Co., Rushville, Ind. Mr. Arbuckle was a recent caller at The Clay-Worker office, and stated that they would rebuild their machine shop in order to better meet the growing demand for "Hoosier" brick and tile machines.

Mark Fischer, an employe of the Enterprise Brick Company, St. Louis, Mo., was badly burned while lighting a crude petroleum fire under a brick kiln. A back draft in the kiln had been left open, and when he applied the light at the front opening, the flames leaped out and he was instantly enveloped in fire.

The past season was a very successful one for C. & A. Potts & Co., Indianapolis, and the year wound up exceptionally good, for during the month of December, they shipped two complete outfits to Washington and two to Los Angeles. The demand for their combined disintegrator and crusher has been beyond their expectations.

Parties looking for a bargain in the way of an established brick plant will do well to investigate the property offered for sale through our For Sale columns by R. O. Chester. The plant is located in Western Pennsylvania, is equipped throughout with modern machinery, in first-class condition, has good kilns and a dryer, with good clay in abundance, cheap fuel, and a good market for the finished product.

Recent sales of the American Blower Company, Detroit, Mich., includes apparatus for the following brick companies:

Alton (Ill.) Paving Brick Company: Chicago Retort Fire Brick Company, Ottawa, Ill.: South Webster (Ohio) Brick Company; Lewisburg (Pa.) Brick Manufacturing Company; The Menomonie (Wis.) Hydraulic Press Brick Company, and the Cleveland Hydraulic Press Brick Company, South Park, Ohio.

The Maumee Brick and Tile Company has been incorporated at Ft. Wayne, Ind., and will erect a large plant for the manufacture of brick and tile, with a capacity of 30,000 brick per day. They have leased forty acres of land containing a fine bank of clay. George Japp is president, John Koehler vice-president, J. E. K. France, secretary and G. Haller, treasurer. They expect to have the plant ready for operation by spring, and will install a complete outfit from the shops of the Henry Martin Brick Machine Mfg. Company, Lancaster, Pa.

The Robinson Clay Product Company, Akron, Ohio, sustained a slight loss by fire caused by spontaneous combustion in one of their ware houses, or packing sheds.

L. E. Lyons, secretary of the Brook Terra Cotta, Tile and Brick Company, Brook, Ind., has filed a notice of the increase of the capital stock of the company from $30,000 to $75,000.

The little town of Waverly, Mo., is to have an immense brick plant with a capacity of 120,000 brick per day, mostly pavers, as there a great demand for paving brick in that section of the State.

Hudson River brick are now bringing $10.60 per thousand for the best grades in the open market. This is the highest price the Hudson River brickmakers have got for their brick since 1882.

The plant of the Preston Brick Works, Hornellsville, N. Y., were closed down for the winter the latter part of December. A number of improvements will be made before the works start up again.

Mr. W. B. Garrabrants, Berkeley Heights, New Jersey, has placed contracts with the Henry Martin Brick Machine Mfg. Company, Lancaster, Pa., covering the latest improved "Martin" dryers with 15,000 capacity together with the "Martin" latest improved cable delivery system.

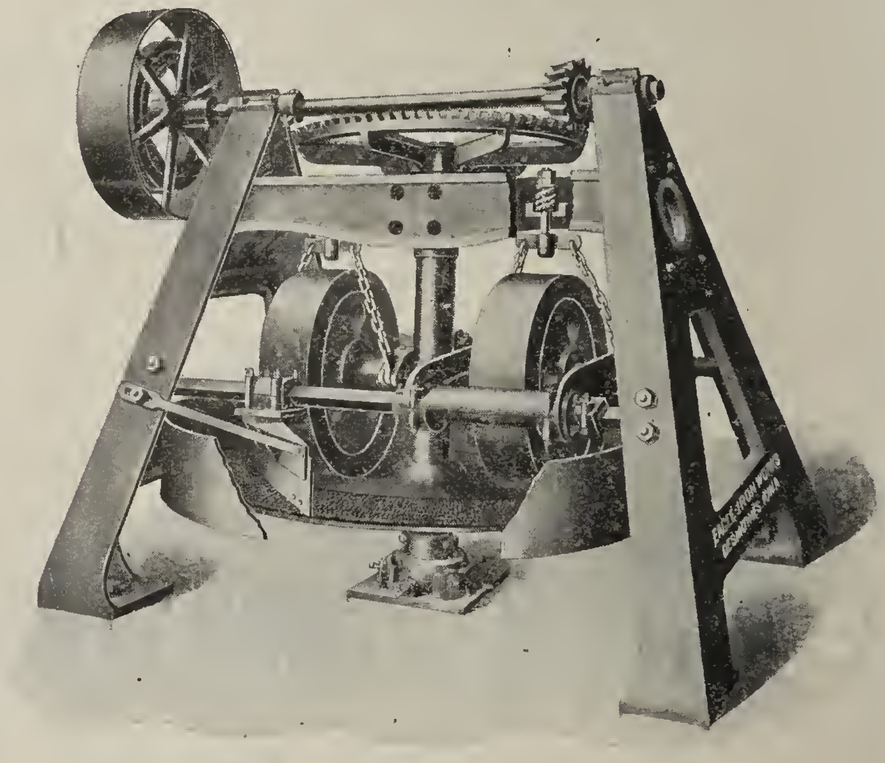
The Edmonton Pressed Brick Company, Edmonton, Alta., will install a dry press at their plant for the purpose of manufacturing press brick in connection with their common building brick. This will give them a capacity of 50,000 brick a day.

The Barber Asphalt Paving Company is demolishing its old paving brick plant at Des Moines, Iowa, and will erect in its stead a fine new plant at a cost of $125,000. The plant will have an immense yearly capacity, and will be one of the largest brick manufacturing plants in the West.

In a recent letter enclosing subscription to The Clay-Worker, W. A. Roberts secretary and treasurer of the Altahama Brick and Tile Company, Theo, Ga., says that they expect to install a dryer at their plant at Darien Junction, and would be glad to correspond with the various dryer firms.

Independent and Suspended Mullers

the distinguishing feature of our **DRY PANS.**



Other valuable features which our catalogue fully describes.

EAGLE IRON WORKS,
Des Moines, Iowa.

THE CLAY-WORKER

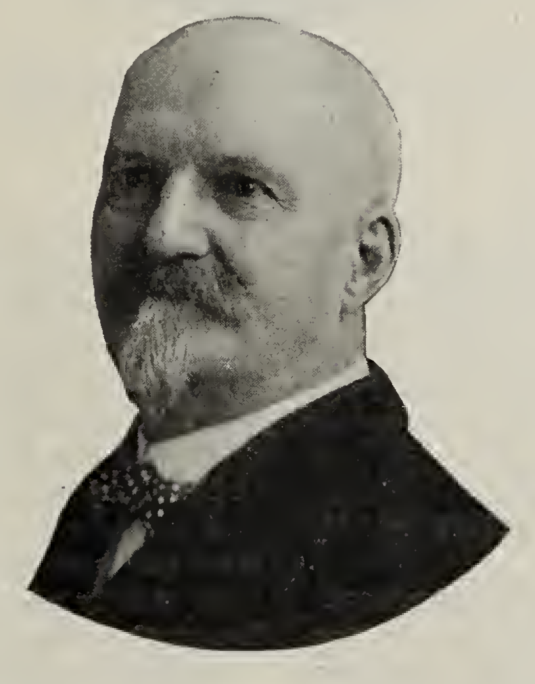
The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol XLV. INDIANAPOLIS, IND., FEBRUARY, 1906. No. 2.

OFFICIAL REPORT

Of the Twentieth Annual Convention of the National Brick Manufacturers' Association, Held at Philadelphia, Pa., February 7, 8, and 9, 1906.

THE "CITY OF BROTHERLY LOVE" fully lived up to that appellation Convention week. Never was there greater harmony and good fellowship than that which characterized the Twentieth Annual N. B. M. A. meeting. Harmony with a capital "H" prevailed throughout the entire proceedings, and it was not the harmony of indifference or decay, but harmony of a virile sort, such as springs from enthusiasm of earnest men bent on advancing a common interest and tempered with kindly feeling, closely akin to affection. The convention was a record breaker in every respect. The attendance was the largest in the history of the Association, there being nearly 600 in attendance including the ladies. The fourth and last edition of the Numerical Roster showed a total registration of 447, the last to register and take membership was J. B. Weigel, Pierce, Ohio, whose number was 462, and as usual, there were many present who did not register at all. The sessions were well attended and, as the following pages attest, the papers were able, the discussions earnest, while the lobby talks were incessant; many a "button-hole" was worn to a frazzle, figuratively speaking, but the wearer always wore a happy expression. Contentment prevailed, and there were no "kicks" or complaints of any sort, which is remarkable considering the crowded condition of the hotel. The local members were omnipresent, the success of the convention being in a large measure due to their constant attendance, both night and day, every individual as opportunity offered, serving as a bureau of information or as a guide to the various points of interest or local plants, many of which were visited, the one-session-a-day idea affording ample opportunity for these sight-seeing trips, which were thoroughly enjoyed.


President J. M. Blair,
Cincinnati, Ohio.

FIRST SESSION.

Wednesday, 2:30 P. M., February 7, 1906.

President Blair: Gentlemen of the Convention, you will please come to order. The first order of exercises, as is customary at all of our conventions, is opening the proceedings by prayer. I have the pleasure of introducing the Rev. Mr. E. E. Burris, of Philadelphia, Pa., who has kindly come to perform that service.

The Opening Prayer.

Rev. E. E. Burris: Let us all look to God. Almighty God, we come to Thee by the way of the cross this afternoon, for we know of no other way. We cannot tell Thee all our needs, for our lives seem sometimes one long necessity, but we pray Thee that Thy spirit may come through the open doorway of our needs, our individual needs, and our spiritual needs, and leave great riches behind. Give us light for our darkness, wisdom for our ignorance, pardon for our sins, life for our dead, and we pray Thee that we may realize our great possibilities, that each one of us may know his duty and do it, know his place and fill it. May our conscience be as true to the right as the needle to the light. We thank Thee, Blessed One, for the way in which Thou hast guided our individual lives, opening unto us the doors of cheer and hope, and when we have grown tired in life's ceaseless endeavor, the thought of Thee hast quickened our steps. We thank Thee for the land in which we live, for this great peace; we bless Thee for the men who laid the foundation of our Government. We rejoice that they were not only men of cultured minds, but men of cultured consciences. They bore the impress of the Divine, the image of the Invisible God. We thank Thee for all the possibilities to us as citizens living in this land where paupers may become millionaires, and where laborers may become Presidents, and where all the resources can be used for man's good and God's glory. We pray to-day that Thy divine blessing may rest upon this great organized body of men who are toiling in life's ceaseless endeavor to make the world more beautiful, and grant that in all their deliberations the best possible good may come, and may their lives during their stay with us be precious in Thy sight. Bless those they have left behind, care for them, and guide them with Thy Divine providence, and may their lives be precious in God's sight. Mold us, we pray to-day, in Thy Divine image, for we are all molders. We are molding characters. We are all builders, we are constructing buildings which are not to be touched by the hand of time. Bless us in all we do, and when our life's work shall have been finished, then we pray Thee that we may be brought to our reward and receive our welcome. These mercies we ask in the name and grace of our Saviour who taught us to say, "Our Father, who art in Heaven, hallowed be Thy name. Thy Kingdom come, Thy will be done, on earth as it is in Heaven. Give us this day our daily bread. Forgive our sins, as we forgive those who sin against us. Lead us not into temptation, but deliver us from evil, for Thine is the kingdom, and the power, and the glory forever. Amen.

President Blair: The next order of business, according to the printed programme, is the enrollment of members, but this has in a large measure been attended to. We will now have the pleasure of listening to the Honorable John Weaver, the Mayor of this city, who desires to extend a welcome to Philadelphia. I have the pleasure of introducing to you, ladies and gentlemen, the Honorable John Weaver, of Philadelphia. (Prolonged applause.)

President-Elect, John R. Copeland,
Birmingham, Ala.

Second Vice-President, M. E. Gregory,
Corning, N. Y.

First Vice-President, Wm. Conway,
Philadelphia, Pa.

Mayor Weaver's Welcome Address.

Mr. President, Ladies and Gentlemen, Members of the National Brick Manufacturers' Association:—

I want to congratulate you on your twentieth annual convention, and I want to congratulate those of you who are enjoying yourselves so much more than the others. I wonder if you know which of you I mean. I mean those who were fortunate enough to bring their wives with them. (Applause.) How much better we can enjoy ourselves away from home if we have the rest of our family to enjoy it with us. They share our troubles and all our sorrows, and God knows in this vail of tears they are sufficient, why should they not also share our joys and our happiness and all our pleasures. I wish I could see the time when there would be no convention of any body of men in this country unless they brought with them their wives, their mothers, their sisters and sweethearts.

I am sure it gives me a great deal of pleasure to welcome you, gentlemen of the Convention, in this City of Brotherly Love. I do not believe you want me to talk about brickmaking, if you do, I am afraid I should disappoint you, because I know so little about it. I should be very much like the reporter of a paper, whose editor heard of the inundation of a Western town, and telegraphed the reporter to send a full report of the flood. A short time afterwards the editor was astonished to get a message from the reporter which read, "You will find a full account of the flood in the seventh chapter of Genesis." (Laughter.) And that reminds me, gentlemen, that you represent one of the oldest trades of the world; it dates as early, I think, as the eleventh chapter, at least, of the book of Genesis, immediately after the flood. I think the only trade established before yours was Noah's, that of ship's carpenter. But immediately after that, they wanted to build a tower, the Tower of Babel, which was to reach to the heavens, such a tower as we have at Broad and Chestnut streets, and so many of the sky-scrapers in New York, and more of them in Chicago. I doubt very much if the people who contemplated building the Tower of Babel expected to go up higher than the sky-scrapers we have at the present time. I remember the people of the whole earth were of one mind and one speech, and they said, "Let us go to and make brick, and let us burn them thoroughly." I wonder if we burn brick thoroughly to-day, Mr. President. "Let us burn thēm thoroughly, and they had brick and stone, and lime for mortar." So the tower of Babel was built of brick, and you gentlemen represent one of the oldest trades and professions of the world.

I want to welcome you to the City of Philadelphia. Is there any man in this broad land whose heart does not throb more quickly when he appreciates to the full extent the meaning of the City of Philadelphia; Philadelphia and Boston, I often think of as linked together as twin cities. We speak of each one of them very often as the "Cradle of Liberty." I am not satisfied in my own mind as to which of these two cities is entitled to be called the "Cradle of Liberty," but I remember saying not long ago, that I thought it was a very big cradle and the foot of the Puritan was on one rocker and the foot of the Quaker on the other (Applause) and they rocked into being a very lusty child that has become such a great giant that the whole world now hears his shouting. (Applause). We have here a goodly city. We use brick for a great many things. We don't only use them for building, and it seems to me as I look around in a great many cities that brick are beng used more and more every year. We formerly built of stone and marble, but the use of stone and marble is being discontinued now, and you find brick being used instead.

I suppose there has been a great advance in the manufacture of brick. I presume we have at least 150 miles of streets exclusively paved with brick. It ought to be more. It ought to be a larger proportion. We have probably 1,200 or 1,300 miles of asphalt. This is too large a proportion. As you go on with the development of paving brick, I think we will come annually to pave more streets with brick, and I should like very much to see that brought about, because I have an idea you can give us a better pavement and a pavement that will last longer and eventually be cheaper. Because if a pavement lasts longer it is cheaper, even if it cost more at the start.

You are here in this industrial city of Philadelphia. Have any of you ever thought that this is the greatest manufacturing community in the country? We have in our city to-day some representatives of the Chinese Government. They are traveling around over the country to get some ideas in regard to industrial and manufacturing interests, and I had the pleasure of taking them first to the Mint, and afterwards to the Baldwin Locomotive Works. I wish you could all visit that great works, where they have on their pay-roll 17,000 men, and make 2,250 locomotives a year. They told me they would build this year over 2,500, and these are not all being kept in this country, but in every country you will see Baldwin locomotives drawing freight and passengers. Every branch of manufacturing and business you will see represented by great institutions.

Secretary, Theo. A. Randall,
Indianapolis, Ind.

Third Vice-President, Lemon Parker,
St. Louis, Mo.

Treasurer, John W. Sibley,
Birmingham, Ala.

But perhaps you will think of Philadelphia not so much from an industrial standpoint as from a patriotic viewpoint. You are here to-day very close to historic ground. You have but a few squares to walk when you will stand in Independence Hall, which contains within its walls the old bell which rang out liberty to all the country. Especially to the citizens of this land in 1776. And within a very few feet of that is Carpenters' Hall, the hall in which the Constitution was framed, and where the Continental Congress met so many times, and where finally the Constitutional Congress met and struggled over that wonderful document which subsequently received the ratification of the Thirteen States. A little further away is the home of Betsy Ross, the creator of the Stars and Stripes, and across the street is the Quaker graveyard which contains the bones of Benjamin Franklin.

I could give you many instances of what this old city of Philadelphia represents. I had thought about a year ago that many of our citizens had forgotten the principles that our forefathers fought for in those revolutionary days, because in this city of Philadelphia the people had lost all sense of self government. For a great many years in this city we had gone over entirely to Boss rule. But the people of Philadelphia, the 22d day of May, 1905, saw the government restored to the people in all of its parts, (Applause) and then they followed up the good work by adding to the triumphant victory last November. This fight has been going on not only in this city, but in a great many cities of the country and the United States, and I said only a few days ago that I believed the head and front of this movement—shall I call it a movement of renaissance—in civic life was the great head of this Republic, Theodore Roosevelt. (Applause.) He is the very front of this movement, and I tell you the people of the United States have a great deal to be thankful for when they can look to Washington and see that fearless man occupying the President's chair. He is an honest man, a man who is looking after the interests not of corporations, but the interests of every man, woman and child of this great Republic. (Applause.)

And so I could go on, ladies and gentlemen, but I have taken more of your time than I had anticipated. You have a splendid organization. What a beautiful thing it is to have men, competitors in business, banded together not for the purpose of raisng prices, but for the purpose of communicating your ideas one to the other. I said some time ago that municipal government ought to be a congregation of individuals who should impart their very best to the commonwealth, and that the best should be at the command of the whole, so should every organization of this kind be, so that every one should give of his best to the convention, and the very best should be at the command of every individual member.

In closing, in again extending to every one of you the freedom of the city, in welcoming you here to the city of Brotherly Love, let me wish you Godspeed in your convention work; and let me hope and trust that as you leave the city of Philadelphia, you will carry away some thoughts of the people of a pleasing character that shall last until we are all called to the great beyond. (Prolonged applause.)

President Blair: I will call upon Mr. George M. Fiske, of Boston, to respond to Mayor Weaver's hearty welcome to the city of Philadelphia. (Applause.)

Mr. Fiske's Response.

Mr. George M. Fiske: Mr. President, and ladies and gentlemen of the Convention:—

I am sure you will join with me in extending to his Honor, Mayor Weaver, our most hearty thanks for this cordial, this eloquent and hearty welcome to this City of Brotherly Love. We assure you sir, that we have come here with a very great deal of interest, not only to renew the very pleasant personal relations which exist between us as manufacturers of brick, but also expecting that we will receive something of that inspiration of which you have spoken that should come to us from considering the historical and patriotic associations which cluster here.

In the first place, this is the city of Wm. Penn. Let me say just a word about William Penn, because sometimes I think we do not quite appreciate that man. The man who suffered persecution and arrest and imprisonment scores of times rather than to follow the customs and obey the laws of that land in which he lived, because he thought those customs and laws were wrong. The man who made that celebrated treaty out here under the trees with the Indians, of which it was said, "It was the only treaty that was never sworn to and the only treaty never broken."

I think it is a fact that in the early settlement of this country there was hardly an expedition that started out from the old world for the new for mere pecuniary gain, that ever succeeded; at least, that ever succeeded in gaining a permanent foothold here, however plentifully they may have been backed by money and crowned heads. These expeditions founded on principle not only succeeded but the principles they maintained have become essentially the very foundation stones of our Nation. Such were the Puritans and Pilgrims of New England, the Catholics of Maryland, and the Hugenots of the South, and the Quakers who were driven out of England and settled here in this neighborhood. Wm. Penn himself was not a poor man; if I am not mistaken, he owned the whole State of Pennsylvania, quite a little bunch of land, which, by the way, he took in payment of a debt owed by the British Government to his father. Now we brickmakers have taken real estate in payment of bills which we could not collect, but I have never heard of any brickmaker who came out quite so well as William Penn (Laughter) or who could collect so large a slice of the earth's surface. He did not care for it for himself, but he did care for it for his people as a means of their becoming prosperous and happy. I believe William Penn established here the very first government by and for the people, limited, of course, as it must have been, because he could not rule over all, but so far as William Penn could make it, it was a government by and for the people, and so it seems to me we ought to honor the name of William Penn. The people of Philadelphia have done themselves credit in placing upon the highest pinnacle of that great City Hall the statue of that man.

But of course it is in connection with our colonial or early national history that we are perhaps the most interested, the associations that stir us the most deeply. I was over in Independence Hall this morning, and I tried to imagine, and it is not very difficult, how those walls rang with the eloquence of Adams and Hancock and Franklin, and others during that memorable three days debate, the second, third and fourth of July, 1776, and if you please, I would like to repeat just one little paragraph from that famous speech of John Adams. What school boy has not recited it in his school days:

"You and I may not see it. We may not live to see the time when this declaration shall be made. We may die, die colonists; die slaves; die, it may be ignominiously and on the scaffold. If it shall be the pleasure of heaven that my country shall require the poor offering of my life, the victim shall be ready at the appointed hour of sacrifice. But while I do live, give me a country, or at least the hope of a country, and that a free country." (Applause.)

And then a little further on, that wonderful prophesy, how literally it has been fulfilled, where he says, "Through the thick cloud of the present, I see the promise of the future like a sun in heaven that shall make this a glorious and immortal day. When we are in our graves our children will honor it, they will celebrate it with thanksgiving, with festivities, with bonfires and illuminations." God grant there may come to us as we consider those stirring words something of that high and lofty and noble patriotism which actuated these men.

Our secretary has placed upon the front of the program, a representation of the flag and has reminded us that we have come to the birthplace of Old Glory. It was, I think, some time in May, 1776, that George Washington and several other gentlemen called at the home of Mrs. Ross, located on Arch Street, bringing with them a little sketch of

PHILADELPHIA BRICK MANUFACTURERS WHO MADE IT

Murrell Dobbins, Philadelphia.

Thomas B. McAvoy, Philadelphia.

A. D. Keyser, Philadelphia.

the flag which they had made. Mrs. Ross it seems was a woman of taste and in looking at their sketch she made some little suggestions, among others that the five pointed star was more artistic than the six, and taking a piece of paper she deftly folded and clipped it, making a five pointed star and showed the gentlemen how much more graceful it was than the six pointed star they had sketched. General Washington made a few changes in the sketch and Mrs. Ross proceeded to make the flag of the red, white and blue, and that was the birthday of the stars and stripes.

And then there is another recollection which comes, a personal recollection to some today. A little more than 40 years ago a great civil war was raging in this great land of ours, and today many a man who now wears the little bronze button in the lapel of his coat in the days of his young manhood wore the blue uniform. As he came from the East and North on his way to the front he was almost obliged to stop in Philadelphia for a few hours and partake of the hospitality of the Philadelphians. As he came up from the battlefield, sick and weary, he again allowed them to minister to his wants. No city in the Union was situated more favorably geographically for this service, and certainly no State responded more generously to that call.

Then there comes to us as brickmakers, an inspiration in the direction of our industry, for it was here in Philadelphia there was established a great many years ago the plant of that great pioneer in the manufacture of face brick, the Peerless Brick Company, who sent their brick all over the United States, and even abroad, attaining a national and world-wide reputation. It was their example that stimulated so many other brickmakers in different parts of the country to follow in their footsteps and equal their products.

So we shall go away from Philadelphia at the close of this convention carrying with us not only a very pleasant remembrance of your hearty welcome, but also something of an inspiration in the direction of historical memories and patriotism and industrial ambition. Again sir, we thank you. (Applause.)

Secretary Randall: The next thing, according to program is the Annual Address of our President.

President Blair: Ladies and Gentlemen, before proceeding with the brief remarks which I have prepared, I want to congratulate you upon this fine assembly of brickmakers from all over this country. I tell you it is a very gratifying sight to stand here and look into the faces of the hundreds of brickmakers attending this the twentieth annual convention of the National Brick Manufacturers' Association. It makes my heart feel proud to know that in Cincinnati, twenty years ago, the idea was conceived of organizing an association of this kind, and this is the fruition of it. I tell you, gentlemen, there is no telling the extent to which it will advance in the next twenty years. I assure you I am very proud to preside over your deliberations. (Applause.)

THE PRESIDENT'S ANNUAL ADDRESS.

Gentlemen of the Convention:—

Upon this, the Twentieth Annual Convention of the National Brick Manufacturers Association, it becomes my pleasing duty to preside over your deliberations in this city of Brotherly Love, a city of beautiful houses and massive business structures, where brick is the principal material of construction and the brick manufacturers are all veritable "Bricks."

Everyone who was present at the Nineteenth Annual Convention at Birmingham, Ala., in February, 1905, will remember with the greatest pleasure the fine convention and the great interest there manifested in the entire proceedings, as well as the unbounded hospitality extended to the delegates by our Southern brethern at Birmingham, as well as the side trips to New Orleans. Together, they were truly an education in every sense of the word, and hence emphasized the great benefit accruing to membership in our National Organization, and impressed us with the importance of keeping up the high standard of the N. B. M. A. Each member returned to his home fully convinced that it was good to have been there.

The past year has been one of exceptionally great activity in the brick industry, and the demand for building brick has been fully equal to the supply. Statistical reports show that every city in the Union with the exception of Pittsburg and Atlanta, increased in 1905. in the amount of buildings erected, also that an increase of thirty-three per cent. in the entire country is recorded. Especially has vitrified paving brick materally increased, for street work, showing that the high standard required by the manufacturers in their output, and the further agitation of the good roads proposition has borne good results, more certainly is this the case in suburban streets of large cities. We see the increase from year to year in the use of brick, following the rise in prices of lumber from the denuding of forests, where formally wooden buildings predominated. There is no question but what the floating capital of the country has gone in 1905 in the new buildings erected, and hence the reason there came a period of money distress in the fall of 1905 is attributed to the record of new buildings which shows $150,000,000 expended more than in 1904, and there is no apparent decrease in expected building operations for this year, our great cities seem to be reconstructing themselves. There are still thousands of miles of railroads to be built and a large area of uncultivated land to be opened up and made productive, with growing foreign trade will drive all our mills and factories to their utmost capacity and require the enlarging of existing plants and building of new ones. The status of the iron and steel trade

PLEASANT FOR VISITORS N. B. M. A. CONVENTION WEEK.

J. H. Chambers, Philadelphia.

I. L. Conkling, Philadelphia.

C. H. Kimball, Philadelphia.

is generally conceded to be the barometer of prosperity or the contrary in business but more especially in the building line; it is shown that this industry is booming. The demand has grown steadily since the holidays, and furnaces that were banked have resumed operations and the outlook for the year is most excellent.

Concrete competition will no doubt supplement but not supplant brick and terra cotta. We need not anticipate any reduction in the output of brick and terra cotta on account of the introduction of cement construction, for the added expense together with the increased time required will make the cost more expensive than brick unless it should be that a scarcity of journeymen bricklayers might lead to the substitution of concrete work for brick work executed as it is by unskilled labor. Hence the most serious menace to the consumption of brick in the future will be the lack of skilled workmen to put your output into brickwork, for through the arditrary exaction of the trades union, restricting the number of bricklayer's apprentices to be employed will cause a diminution in the number of skilled mechanics besides depriving deserving young men of the advantage that this great country vouchsafes to everyone who is willing to apply himself to so meritorious an undertaking as the acquiring of a trade. American young men are constantly applying for this privilege, and it is a serious problem what to do with the rising generation in this country, if the avenues of acquiring trades are closed to them.

The greatest and best asset of this country is the "New Manhood" the boys and young men who are bubbling over with enthusiasm to do something for the advancement and progress of the United States, hence they should be assisted rather than restrained or held back, and it is your bounden duty to assist in sustaining these boys in their desire for employment. Should it not be the part of your patriotic endeavor that you see to it that these future rulers of this country should be permitted to prepare themselves for the activities of business life? To this end let us forward, encourage, and foster the establishments and continuance of trade schools for bricklayers. It is not alone from mere mercenary motives that we would advise your taking up this proposition, but rather should it be actuated by the more patriotic instinct innate in all conscientious American citizens who have the welfare of the country at heart, still the fact is apparent that unless something radical is done along this line that concrete construction erected by common laborers will supplant the use of brick throughout the country, for I know that in the city of Cincinnati alone, there was the sale of ten million brick lost to the manufacturers by the use of concrete, owing to a lack of journeymen to lay the brick.

This matter demands your earnest attention, so let it be your purpose to stir up this matter of establishing schools for bricklayers in each of your localities. It will not take a large amount of money to institute them, there are a sufficient number of public spirited and philanthropic citizens of means who will, when importuned on this subject, assist you with the means to start schools of this kind. Some may assert that it is not within the province of this organization to take up this matter of trade schools, but that the contracting brick masons should be the ones to take the initiative. Why I ask, should not you who have the larger amount of capital invested in your business, join with those directly interested together with such philanthropic and wealthy men take this matter up, when it is distinctly understood that if it is for the best interests of the greatest number and put it into execution. The architects will be the first to come to your assistance, knowing the delays they have encountered this season in the prosecution of their work, and then it will not be long before we have American mechanics to build with American material, our American buildings. As transportation enters so largely in the prosecution of our business, hence anything that would lead to fair competition in this line should be encouraged.

It seems fitting that this organization should recommend to Congress a liberal appropriation for the inland water ways of this country and thus keep in check any excessive freight tariff that may be exacted from competing railroads. Uniform freight rates: This we referred to in our remarks taking the chair at Birmingham, has been fully discussed by shippers and railroad officials through their attorneys and Congressmen are now bending their energies to a successful solution of the problem, and we sincerely hope that good results may come from the extended agitation of this rate subject.

The resolution passed at your previous convention authorizing the appointment of Vice Presidents from each State has been executed and it is presumed and expected that these gentlemen so appointed and notified will assist the Executive Committee in adding very materially to our membership.

The programme of proceedings for this meeting is varied and interesting and we sincerely hope it may redound to the benefit of every delegate present at the convention.

Finally remember that the business that we have adopted as our life work in an honorable and ennobling calling, that we who are building up and beautifying this great country are not consumers alone but producers, are part and parcel of a great people, who are well housed through our thrift and energy. Comfortably clothed, with sufficient school houses, and places of worship where plenty is emptying itself into our overflowing garners, our people are contented with remunerative toil, peace reigns within our borders, and all mankind regard us with envy and respect. Let us learn wisdom, and practice virtue in the day of our prosperity so if adversity should come we may be prepared to meet and overcome it.

I want in conclusion to thank the Executive Committee for their co-operation in furthering the interests of this organization and also to say that too much praise cannot be extended to your worthy Secretary who has by his untiring industry and energy made the N. B. M. A. what it now stands for, viz: The most progressive National Association in the country. I do hope you will give my successor in office the same consideration you have extended to me while your Chief Executive. The work before us is of great importance and I feel assured it will receive careful consideration at your hands. We will now enter upon the business of the convention. (Applause.)

President Blair: I desire to supplement these written remarks by saying to you gentlemen that this matter is of much importance. I find since coming to Philadelphia that there has been for a number of years here in this city instituted a trade school to teach plumbing, bricklaying, plastering and other trades. It has been very successful in this city. An eminent gentleman set the school in operation and at his death he endowed same with $300,000. In Philadelphia, we know by the records that a school was formed by the Builders' Exchange a few years after the one in Girard College, and now there is one in the House of Refuge, and you can see the moment you commence the matter, how soon it prospers and develops into something of great benefit to the young men of this country. There is no desire on my part to exhort, but it occurs to me that this is our time, and the time is ripe and the matter of great consideration. Think of the amount of construction work that is performed with common labor, work that absorbs an immense amount of brick. In Cincinnati in 1904, there were four apprentices who were inducted in the trade as journeymen, while there were twelve who died. How long will it take at that rate for the number of skilled journeymen to die out completely? Is it not better to teach a young man two $4.00 or $5.00 a day, rather than to study law and for ten two $4.00 or $5.00 a day, rather than to study law and for years or more earn not more than $15.00 a week, as so many of them do. Look at the number of bookkeepers, stenographers, and clerks that flood the country. If they were permitted to learn a trade they would be much better off. It seems to me you should not be at all modest in advocating trade schools when you return to your homes in your different localities, because you are brickmakers and do not employ journeymen bricklayers. It does not follow

George M. Fiske, Boston, Mass.

that you have no interest as patriotic citizens in the matter of enabling young men to learn a trade, because at the same time it enables you to sell more brick. I fully believe that the more brick that are used, the better it is for the people of this country.

Mr. Ittner: If my recollection serves me right, it has not been customary to discuss the President's address, and of course, I do not rise so far as I am personally concerned to discuss this address, but I cannot let the occasion pass without raising my voice for the purpose of adding additional emphasis to what has been said in the address about trade schools for the American boy. It may be possible that during the sessions of this Convention this matter will come up. I have a resolution in my pocket prepared to offer on this subject, that we do everything in our power in every city, hamlet and village in this United States to encourage means and methods by which young men growing up in this country, whether they be natives or foreign born, will have an opportunity to learn the trade of their choice. Mr. President, this is about all I desire to say on this subject. I thank you for making this matter such a prominent feature of your address. This is the first time in my recollection that this Association has taken up the matter and I hope they will keep it in hand and in mind from this on until, when we meet sixteen years hence (it has been some sixteen years since we met in this city) at some convention in the future, be it five, or ten or fifteen years, that there will be a different condition of affairs existing in this country from what exists today. (Applause.)

Wm. P. Blair, Terre Haute, Ind.

President Blair: If there is no further discussion, we will proceed with the next order of business, which is the Treasurer's Report.

TREASURER SIBLEY'S REPORT TO THE OFFICERS AND MEMBERS OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION.

Gentlemen of the Convention:—

There is an old saying that "man is a harp and truly woman does the harping," and I fear that you have concluded from my past annual reports that I am quite a "harper" on the subject of SURPLUS. I regret that the statement of Receipts and Disbursements —handed you herewith—will show a diminution in the size of our balance in the Treasury, but as our Convention this year is held near the financial center of the country where surpluses have been discussed in such a strenuous manner recently, and brickmakers all strive to be "up to date," I suppose you will not feel too sore over our following the fad of the day.

In this great day of expansion in the art of clayworking, our general expenses have naturally increased in order to keep abreast of the times. Two unusual items in our report account form the drain upon the surplus, and I recommend that in the future the printing of the pamphlets of technical investigations be paid for by the concerns directly interested in the results, and not be furnished gratis by the Association. The same would be true of stationery for State Vice-Presidents. Some of the other members no doubt can call to mind that in days of "Auld Lang Syne" the surplus in our Treasury got below $40.00, and I wish to avoid such a condition of affairs again, so that you may always be filled with the same degree of satisfaction, in regard to our surplus, as animated an old darkey preacher in Alabama, who was delivering his famous sermon on the "Exodus of the Children of Israel." In his peroration he was discussing the dismay and terror prevailing among the Israelites when they arrived at the shore of the Red Sea. He said, "The Lord told Moses to stretch out his rod, but Moses didn't have no rod so he borrowed Aaron's rod and stretched it over the Red Sea and prayed to the Lord to help them out of their distress; so there came along a chilly north wind and the ice froze a foot thick over the sea, and the Children of Israel passed over dry shod. Old Captain Pharaoh came along with the Egyptians and thought he had the Israelites sho' and sailed out on top of the ice—the Israelites got across on the other shore and Pharaoh was in the middle of the Sea when the Lord made the sun to shine eleven times hotter than it ever had shone before and melted all de ice and dropped Pharaoh and all his army in the middle of the Sea and they drowned." Just at this point—as the good sisters in the congregation were sighing and shouting—a young darkey who had been educated at Booker Washington's school arose to his feet and said, "Parson, I desire to ask you a question." "State your pint sir, state your pint," said the preacher. "Well I have been going to school at Tuskegee and I have been studying geography, and I learned that the Red Sea is situated in the tropics and they don't have any ice in the tropics. How do you explain that?" The parson threw his head back and looked over his spectacles in a very austere manner and said, "I's glad you axed that question and I want you to understand that dese here things dat I's been talking 'bout happened four or five thousand years ago, and in dem days dey didn't have no geography and no tropics" and all over the congregation could be heard cries "Now you's talking nigger" and the preacher looked around and said, "Is day any other educated nigger in the congregation dat 'sires to ax the parson a question?" (Laughter and applause.)

RECEIPTS AND DISBURSEMENTS.

Account of the Nineteenth Annual Convention of the National Rrick Manufacturers' Association.

RECEIPTS.

Balance in Treasury, Account 1904..........		$724.73
Membership fees, 80 at $5.00, account 1905....	$400.00	
Membership fees, 447, at $3.00, account 1905....	1341.00	
Reports, pamphlets, etc., sold................	20.00	
		1761.00
		$2485.73

DISBURSEMENTS.

Paid for Programmes, Mailing, etc., per Voucher	114.50	
Paid for Badges, etc, per Voucher............	168.25	
Paid for Executive Com. Circular Letters, etc...	66.56	
Paid for Com. Technical Investigation Report, per Voucher	164.60	
Paid for Stationery for State vice-presidents, per Voucher	109.50	
Paid for Convention Reports, (1905) per Voucher	230.10	
Paid for Numerical Roster, Convention Expenses, per Voucher	164.50	
Paid for Assistant Secretary per Voucher......	100.00	
Paid for Engrossing Certificates, per Voucher	7.30	
Paid for Ohio University Scholarship, per V'chr	250.00	
Paid for Allowance for Clerk Hire, per Voucher	250.00	
Paid for Sec. Traveling Expenses, per Voucher...	250.00	
Paid for Postage, Expressage, Exchange, etc., per Voucher	165.25	
Total Expenditures		2040.55
Balance in Treasury		445.18
		$2485.73

RECAPITULATION.

Balance Account, 1904		$724.73
Total Expenses	2040.55	
Total Receipts	1761.00	
Excess of Expenses over Revenue...........		279.55
Balance in Treasury.......................		$445.18

President Blair: What is your pleasure gentlemen, in regard to this report?

C. A. Bloomfield, Metuchen, N. J.: I move the report be accepted with thanks and made a part of our records.

Motion seconded and carried.

THE ELECTION OF OFFICERS.

Secretary Randall: The next is the Election and Installation of Officers. You all understand that our Constitution provides for the election by ballot, and the only manner in which we can avoid the formality of balloting is to move the suspension of the rules and to instruct one of the officers to cast the ballot in case there is a unanimous choice. The first in order is the election of President.

Wm. Conway, Philadelphia: No doubt you will think I arise to nominate a Philadelphia man, but such is not the case. Not but that we have as members of this Association men worthy to be your President, not but that we have men here we would be proud to be your President, but gentlemen, we are modest men, naturally, being of Quaker descent. We have men who date their ancestry back to the time when the old Liberty Bell rang out freedom to the Nation. But, I wish to nominate an old member of this Association, one from the city which so handsomely entertained us last year, the city known as the Pittsburg of the South. I wish to nominate and ask your vote for Mr. J. R. Copeland, of Birmingham, Ala., for President of this Association. (Applause.)

Will P. Blair, Terre Haute, Ind.: On behalf of the central portion of the country, I am pleased to rise for the purpose of seconding the nomination of the gentleman from Birmingham whom we all must remember, for during his entire connection with this Association he has by his courtesy, and by his bearing endeared himself to us. It gives me great pleasure to second the nomination of one who will "cope" the entire country, and cope the entire "land," if you please.

W. D. Gates, Chicago: I move that nominations be closed, the rules be suspended, and the Secretary instructed to cast the unanimous ballot of the Convention for Mr. Copeland.

J. Fred Smith, Omaha, Neb.

Motion seconded by several and carried.

President Blair: The Secretary has cast the ballot and you have elected John R. Copeland, of Birmingham, Ala., for your President, to serve the ensuing year. There is just a word I want to say here. When I went to Birmingham last year, I went there not expecting to receive any favors at your hands, because I did not deserve them. I expected we would put Mr. Copeland in as President, because we had met in his city. But the brickmakers of Birmingham met and said, "Blair, we want you to take the presidency, and we will be satisfied if when we meet a year hence to have Mr. Copeland for President." Of course, I could not resist that, and now we have the man we should have had last year in Birmingham. (Applause.)

Secretary Randall: The next is the nomination for first vice-president.

L. L. Stephenson, Birmingham, Ala.: I would like to nominate for first vice president a man not from Birmingham, as I am myself. I feel that Birmingham would like to do something nice in return for the compliment you have just paid us, and I therefore nominate Mr. Conway, of Philadelphia, who I understand has been a member of this organization for a good many years, and a constant attendant at the Conventions. He is also an ex-president of the Builders' Exchange and I note from the President's address that the Builders' Exchange has been connected in some way with the school for the education of bricklayers, and it is possible he may be able to hit on some plan of making for us more bricklayers which might be of some benefit. He is also connected with one of the leading financial institutions of this city. He is a man of affairs and I know he will make us an efficient officer. I would ask your vote in his behalf, and hope he will receive the same unanimous support as was given my friend and fellow townsman.

Mr. Thomas F. Armstrong, Philadelphia: I have a most pleasing duty. We Philadelphians are proud of our city, proud of our good Mayor, proud of our building interests, proud of our Exchange, but we are more proud of our men, and in seconding the nomination of Mr. Conway, I am seconding the nomination of a man in every way worthy and capable of filling the office of first vice-president of this Association. The good brother from Birmingham said everything there was to be said about him. He is ex-president of our Exchange, active, efficient and successful, he is one of the financiers of the town, a man in his own business, second to none. I think it will be an honor to him, and I also think it will be an honor to this body to have a man of this sort as one of its officers, and we hope this honor will come to him.

J. Fred Smith, Omaha: I move the rules be suspended, and the Secretary cast the unanimous ballot for Mr. Conway for first vice-president for the following year.

Seconded and carried.

President Blair: The Secretary has cast the ballot and Mr. Conway has been elected first vice-president of this Association. Nominations for second vice-president are now in order.

Mr. R. G. Eisenhart, Horseheads, N. Y.: We have with us a man from the great Empire State of New York, a brickmaker who has not only proved his loyalty to this Association, but to all those who come in contact with him in the brickmaking business. He is honest and operates one of the most successful brickmaking plants in Western New York. As a neighbor and competitor I could say a great many complimentary things about him, but in order to save him I only mention one. He always goes after business and when he has got all the orders he wants he lets the other fellows have the rest. It affords me pleasure to nominate Mr. M. E. Gregory, of Corning, N. Y. (Applause.)

Mr. Bloomfield: I second the nomination and move the suspension of the rules and that the Secretary be instructed to cast the ballot for Mr. Gregory for second vice-president.

Motion seconded and carried.

President Blair: The Secretary has cast the ballot and Mr. Gregory is your second vice-president. Next in order is the nomination of third vice-president.

Mr. Ittner: I rise to place in nomination the name of Mr. Lemon Parker, of St. Louis, who has attended a number of our Conventions and has for years taken a deep interest in the Association. I consider him in every way worthy and competent to fill the place, and I would ask in his behalf from this Convention the same courtesy and unanimity that was exercised in behalf of the other officers that have just been elected.

Mr. Yates: I second the nomination.

Mr. Sibley: I move the nominations be closed, the rules be suspended and the Secretary cast the ballot for Mr. Parker.

Motion seconded and carried.

President Blair: The Secretary has cast the ballot and

Mr. Lemon Parker is your third vice-president. Secretary will announce the next.

Secretary Randall: I will say this apparent willingness gives me great hope. My heart rather failed me for a while, but things are coming along so unanimously that I now hope I may skin through. The next in order is the nomination for Secretary.

Albert D. Klein, of J. Baltimore: Mr. President, ladies and gentlemen. I think we ought to "knock" Mr. Randall this time. He gets up there and thinks, "Why, it's Randall," and I think it is up to us to see that it isn't Randall. We all know that this position of Secretary requires a man of peculiar ability, a man of veracity, integrity and good fellowship. We know we have a man in this Association, a man who combines these several merits. He is all that and a good fellow beside. I know he comes to us genial, whole-souled and greets us pleasantly when we come up, provided we have $2.00 to pay for the Clay-Worker—there, I have given my secret away. I did not intend to tell you so soon, but I nominate Teddy Randall—Washington has a Teddy R., and so have we our own Teddy R.,—so I nominate "Teddy" Randall for Secretary. (Applause.)

Mr. Bloomfield: I second the nomination and move the rules be suspended and that the President cast the ballot for Mr. Randall, our "Teddy" Randall, for Secretary.

Seconded and carried.

President Blair: The ballot has been cast and you have elected Mr. Randall for our Secretary once more. I will ask him to announce the next.

Secretary Randall: We now have reached another man who is sitting here trembling in his shoes fearing consequences because his balance is low. Nominations are in order for Treasurer.

Mr. Ittner: It affords me extreme pleasure to nominate Treasurer Sibley who has served us so faithfully for so many years, and there is one condition that he adheres to, and it is that which endears him to me. He has never submitted a report to this Association within my recollection that he did not inject some fun into it. I tell you we all need a little laugh once in a while, and I judge that if Mr. Sibley should bring a report before this convention without fun in it, while it might be adopted and approved, I certainly should object to such a report from him. I therefore with a great deal of pleasure place in nomination Mr. Sibley to succeed himself as Treasurer of this Association, and I hope he may meet with the same unanimity that the other officers have met with.

Mr. Gates: I think this is the first and only organization I know of where a man holds on to his office by such a delicate thread as Sibley. If Sibley did not have his joke, Anthony would not nominate him. I want to second this nomination honestly and heartily. There could not be a better fellow, there could not be a more efficient treasurer, there could not be a treasurer who threw in better jokes. I want to call his attention, however, to the string tied to the nomination, and that he must not come up with a report without a joke in it. (Laughter and applause.)

Mr. Ittner: I rise to a point of personal privilege. Brother Gates has not quoted me right. He said if Brother Sibley did not have fun in his report, I would not vote for him. I said if he did not have fun in it, I would not vote to accept his report. I want it distinctly understood that so far as I am personally concerned I propose to vote for Brother Sibley to succeed himself as long as I have life and remain a member of this Association, whether he has fun in his report or not.

Mr. Gates: Of course, I understood Anthony to say he would not approve his report without a joke in it, and what is the use of voting to re-elect him if he did not approve and accept his report. (Laughter.)

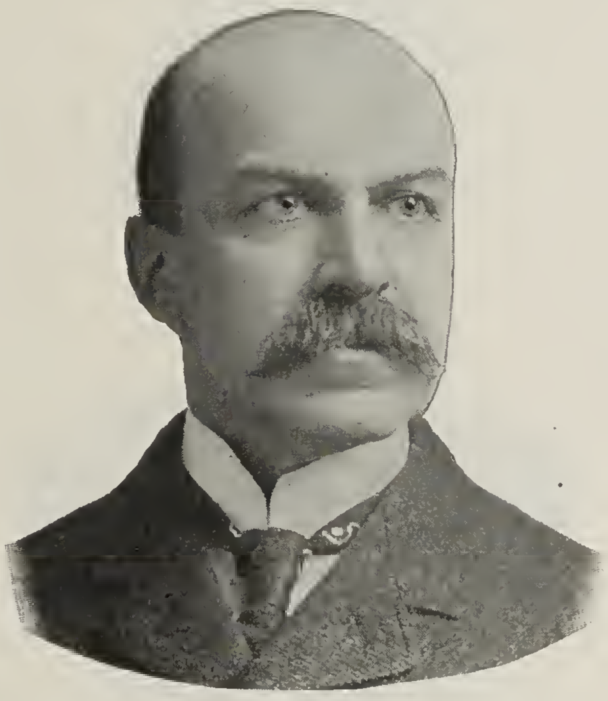
Mr. W. W. Winslow, Indianapolis: I move that the rules be suspended and that the Secretary cast the ballot for Mr. Sibley for Treasurer.

Motion seconded and carried.

INSTALLATION OF OFFICERS.

President Blair: The Secretary has cast the ballot and Mr. Sibley has been re-elected Treasurer. It now becomes my duty to present to you your newly elected officers. I will ask Mr. Gates and Mr. Sibley to act as a committee to escort Mr. Copeland to the chair. (Applause.) It is with great pleasure that I introduce to you this great, big hearted, whole-souled man, Mr. John Copeland, for your President for the ensuing year. (Applause.)

President Copeland: Mr. President, ladies and gentlemen. I wish to thank you most cordially for the honor you have bestowed upon me, and I hope to have your co-operation during the following year, and trust that our Association may prosper in the future as it has in the past. The nominating speech of Mr. Conway and the second of my good brother Blair, completely knocked the wind out of my sails. It reminded me a little of a gentleman—a candidate down in Southern Georgia,—who was extolling the many good traits of that State and especially the voters in his audience, when an old acquaintance way back in the hall got up and said, "Excuse me, Colonel, but I thought you were from South Carolina." "Yes sir," he said, "I was, and if I were there now, would be from there again." (Applause.) This has knocked the wind out of my sails. I want to thank you for this election and hope that the coming year will be a successful one not only for the Association but to each individual member thereof. (Applause.) I will appoint the same committee who performed that office for me to escort Mr. Conway to the platform. I guess those two big hearted men can take care of our genial Vice-President. I take pleasure in introducing to you Mr. Wm. Conway whom you have honored by the election as First Vice-President. (Applause.)



R. G. Eisenhart, Horseheads, N. Y.

Mr. Conway: Mr. President, ladies and gentlemen. When I nominated Mr. Copeland here for President and said all the nice things I could think of about him, on the spur of the moment, little did I think that Mr. Stephenson would turn the table by nominating me for this high office. I assure you that I appreciate the great trust you have imposed upon me. I appreciate the compliment you have paid me. When I look into the faces of these gentlemen, so many of whom I know, I feel that you have complimented the city of Philadelphia, more than you have me, and it was more for the city than for me that you elected me, but I thank you just the same, and I promise that every duty you ask me to perform I will do to the best of my ability. (Applause.)

President Copeland: I will appoint Mr. Eisenhart and Mr. Spiers a committee to escort the second vice-president to the platform. I take great pleasure in introducing our small (?) second vice-president who I dare say will always be equal to the occasion and to taking care of himself. Gentlemen of the Convention, Mr. Gregory.

Mr. M. E. Gregory: I thank you most sincerely for the kind way in which you have treated me today. It is indeed an unexpected pleasure to be called as second vice-president of this Association, the Association that is nearest my heart of all the orders and Associations to which I belong. None of the others can take the place of the National Brick Manufacturers' Association. I assure you it will give me much pleasure to do everything I can for the promotion of our work. We have a great work to do, but working together we may accomplish great things, and with the corps of officers we have, I think we will pull through. That reminds me a little bit of a story I heard not long since. A minister had a son who was prone to do bad things, and among others was playing cards, which annoyed the old minister and his wife very much. One day the son was up in a room playing solitaire when he heard his mother coming, and he picked up all the cards and rushed over and put them in the pocket of a coat that was hanging in the room, and they were safe. It so happened the next day the minister had to administer the ordinance of baptism. He put on his coat and went to the appointed place and waded down into the water, and as he walked into the water, the pockets became filled with water, and the cards floated out into the stream, and they came in this order: ace, king, queen, knave and ten spot. The people were amazed and then began to giggle. The mother looked up at the son, and the son at the mother, and the latter said, "You have ruined your poor father," and the boy said, "Well, mother, if father can't pull through on that hand, there is no show for him." (Laughter and applause.)

Chas. A. Bloomfield, Metuchen, N. J.

President Copeland: I will appoint Mr. Ittner and Mr. Fred Talbot to conduct our newly elected Third Vice-President for the ensuing year, to the chair. It is with pleasure that I introduce to you Mr. Lemon Parker, of St. Louis, your Third Vice-President. (Applause.)

Mr. Parker: Mr. President, ladies and gentlemen, this is an honor I did not expect, and I do not know that I can express myself. I assure you that I will do all in my power to further the interests of the Association and carry out the duties which will be imposed on me in the small measure that they will be. I heartily thank you for the honor conferred. (Applause.)

President Copeland: I think it would be very hard to find any one who is familiar enough with Mr. Randall to escort him up here and present him to the chair, but I think if our good friend Gates would look around and see Mr. Randall somewhere in the room, maybe an introduction from Gates would help. (Laughter.) I now have the pleasure in introducing to you, ladies and gentlemen, the stranger whom Mr. Gates has brought forward, who no doubt will do the best he can for the ensuing year. (Applause.)

Secretary Randall: I tried to induce Mr. Copeland to take the next in order and skip me. I thought you had had about enough of this sort of thing, but to make Gates a committee to escort me is rather more than I can bear. They are all telling stories, and it reminds me of one that is told down in Indiana. A gentleman had been going around with the Governor, making the Governor's speeches for him. We had a Governor some years ago, "Blue Jeans," we called him, and he, though a farmer, served the State well, but he was not a speech-maker. Soon after his election he started on a tour of inspection and took with him a political orator. He went up to the prison at Michigan City and they wanted him to address the convicts; they were gathered together and the Governor bowed to them and then introduced his speech-maker. It was a large audience—about the size he had been talking to during the campaign, and he forgetting the situation, launched out in his regulation prelude, "Gentlemen, I am glad to see so many of you here." (Laughter.) I can say with sincerity, ladies and gentlemen, that I am very glad to see so many of you here. I knew all the time that we would have a large attendance. I knew you would come. We won't have to "pad" our register this year; we have enough present to satisfy our critics even. I appreciate this twentieth compliment you have paid me. Do you know—you can hardly realize from my youthful appearance that I have served you twenty years, (Laughter) but I have, and our banner there which now gives you the places and dates of previous conventions will be my credential. I have served you twenty years, and God willing, I will serve you another twenty years, if you want me to. I thank you cordially both for the honor and the many kind things you do for me, not only during the convention, but straight through the year. I appreciate it from the bottom of my heart. (Applause.)

President Copeland: The next stranger we have is our newly elected Treasurer, and I would ask Mr. Ittner, the brother who so kindly nominated him, to escort him to the chair. (Applause.) It is with pleasure that I introduce to you Mr. Sibley, who came back to Birmingham. (Applause.)

Mr. John W. Sibley: Your kind appreciation has been so generously manifested to Randall and myself these many years that I am afraid we are like spoiled children. You need not be surprised if we manifest some of the traits of such children, like the little boy who came into his mother's presence with a beautiful red apple, and she said, "who gave it to you, my son?" "Little Mary Jones." "And what did you say to her?" "I told her to shut up her crying." (Laughter.)

President Copeland: I will ask the Secretary to announce the next in order.

Secretary Randall: There is another election, and that is a member of the Committee on Technical Investigation. If you will turn to the back part of your program, you will see that the Committee consists of Prof. Orton as Secretary, C. A. Bloomfield, W. D. Richardson, Anthony Ittner, and D. V. Purington. Mr. Purington's term expires this year. For the second time in twenty years Mr. Purington is not with us, this time owing to ill health, but he is represented by this bouquet which graces the Assistant Secretary's desk.

Mr. Gates: I move that Mr. D. V. Purington be continued on this committee for another term.

Mr. Sibley: I second the motion, and suggest that it be a rising vote.

Carried unanimously.

Mr. Gates: This reminds me of an item that fits in place in our regular order of business, but without any consultation with any one else I have a matter I wish to bring up. As I come here, my mind goes out, and I can see a man way down in the South land, and his face is set toward Philadelphia. D. V. Purington, who has attended eighteen conventions, and not only eighteen conventions bu tevery session of the eighteen meetings, your old friend, and my old friend, is kept away this year through illness. We trust the climate and the soft breezes from the sound, the shade from the sun, if it is too hot, and all the health dealing elements of the South, will bring him back his health, and I believe it will. But I wish right here in this first session of this convention to instruct our Secretary to send him the best wishes of the convention by wire.

Motion seconded by several members, and carried unanimously.

President Copeland: I think this is the proper thing to do, for Mr. Purington has always manifested such an interest in the Association.

Secretary Randall: This brings us to the first regular number on the program, "The Signs of the Times," by Mr. G. W. McNees, of Kittanning, Pa. Mr. McNees is one of our most able members, and would have given us a fine address, but he is now in the State Legislature—he is serving a term, and it is not out yet. I have a letter and a telegram and had a talk with him by long distance 'phone this morning, expressing regret, from all of which you may know how badly he feels. I will read his letter.

My Dear Randall:—If I were not a Methodist, I should certainly believe that it was decreed that I should not be permitted to attend a N. B. M. A. Convention. After making to you the most solemn promise to be present, I now find myself near the close of an extraordinary session of the Legislature in the midst of the third reading of bills, and there is no escape. The Lord knows how much I would prefer being with you to being here, but in this instance it is "Duty before pleasure," and I must submit. How much I should love to grasp the hand of the brothers, and more particularly of the sisters. I sincerely trust that you may have a pleasant and profitable session. I shall continue to hope that at sometime in the future, when people have all become so good that extra sessions are not necessary, I shall be able to meet with you, but think I shall never again risk my reputation for veracity (which is now severely strained) with the N. B. M. A. by making a promise.

I should be much pleased to have the brothers visit me here, provided they bring the sisters along, and I shall take great pleasure in showing you the finest capitol building in the greatest State of this great Union.

Sincerely yours

Harrisburg, Pa., February 6, 1906.

G. W. McNees.

I have asked as a substitute for Mr. McNees, and it will have to be wholly impromptu, one of our enthusiastic members, and trust you will treat him kindly. We will hear from Mr. Albert D. Klein, of J., of Baltimore, who will speak on this subject

"THE SIGNS OF THE TIMES."

Mr. President, Ladies and Gentlemen:

The other fellow is serving a term, and before I get through, you may wish I was serving a term too. "The Signs of the Times" as I understand it, is rather a broad subject, and one that ought not be treated lightly; one that should have been thoroughly considered. One of the first signs of the times is the condition that was touched upon by your retiring President in his address—that of concrete taking the place of brick, and this is a true sign of the times, and the only remedy is in the way of apprentices to the journeymen bricklayers, and while I do not believe individually that your schools for technical education, your trade school, is going to correct this. As I see it, the labor organizations, the people that control prices, are the ones we will have to fight. I do not come here to flaunt the red flag in the face of labor organizations, but that is where you will have is going to correct this, as I see it, the labor organizations, you have got to go right into it. You have got to get your labor associations to a point where they will take in apprentices, and the only way to do this is to get together and teach them in some way. It is a question for your Executive Committee probably to thresh out.

We, too, know there has been an increasing demand for burned clay products. The reason for that is to some extent, in my own mind, also touched upon by our President, the shrinking in the visible supply of timber. With the natural growth of the country, and from all indications, I think the next three years are going to be prosperous ones for brickmakers, and burned clay artists generally.

A point that was given to me was in regard to the superiority of clayware, both as to economy and efficiency. I doubt very much whether I am able to discuss that, and I am not going to take up any time in attempting it.

Here is another suggestion: Concerted action on the part of manufacturers to push forward their good things. This is a good point. You want to get together. You want to put in time talking, and especially the paving brick manufacturers. I visited Cleveland a short time ago, and while there, saw the display of pine made by the Southern Pine Dealers' Association. It was of pine for interior finish in the place of hard woods, and it made a most beautiful display. I think if you paving brick people would get together and make demonstrations of the superiority of vitrified paving brick over bitulithic and asphalt and wooden blocks, you would do well for yourselves and the clay industries generally. Because if you are busy making pavers you will let us make a few common brick occasionally.

W. D. Gates, Chicago, Ill.

Then there is another thing worthy of consideration, and that is the work of the National Association. We know it goes without saying that brickmakers are generally benefitted by membership in an organization such as this. We know we have at our head, with all due respect to Presidents, retiring and to-come, one man who has built it up, and will continue the work, looking after the interests of this National Association. In an organization of this kind, there can be only one man, and without mentioning names, we know we have him, and in his hands the National Association and our interests are well looked after.

We have something new here to-day, and that is this beautiful banner. This is the first time it has been shown.

A lovely sentiment is there in the association of the blue and the gray, with the center group emblematic of our profession or art, or craft. The brick first as the foundation, and supporting the fine ornate capital of terra cotta, and beside it, I guess you would call it, a piece of fire-proofing, and then the very handsome vase, and the lamp, I suppose we might call it the lamp of life, and may we not hope that the lamp of life of this Association may never go out.

The association or combination of these two colors is a beautiful thought, and a beautiful sentiment. Blue stands for courage and truth. True blue, true blue. Gray stands for strength, steadfastness and modesty. And I think the gray is well put at this time in the badges given to our ladies. They are modest, and also true blue, boys, I want to tell you, every one of them. (Applause.) May we not hope and expect to find next year, and the next year to follow, a constantly increasing number of brickmakers rallying about this, our Association banner. It is one of the "signs of the times," which to my mind, promises well for the future. I thank you for your attention. (Applause.)

Secretary Randall: I want to say in reference to the banner that the central sketch or group is the work of Mr. Robertson, one of the artists of the Conkling-Armstrong Terra Cotta Company, of this city, and I think we owe him a debt of gratitude for delineating in such a clever way the products of our industry. I believe we have a banner typical of the Association, and at the same time something to refresh our memories of the places we have met.

Anthony Ittner, St. Louis, Mo.

Mr. Gates Makes a Bid for the Convention.

Mr. Gates: I am aware this is not a continuous performance, but there is one suggestion I want to make, and I want to make it now. Before I left Chicago, my life was nearly worried out of me by men who wanted me to bring one matter before this convention, and the object of which was to enable us to write Chicago once more on that banner for next year. I don't want you to forget it while you are here and get after Randall. We cannot show you so many ancient things that will interest you, as the Philadelphians can, but we can show you lots of nice things. We have got a river that we took liberties with and turned wrong side out, and then we got generous and gave it to St. Louis. (Laughter.) You know about most of the things we have got, but we have got the most energetic reception committee you ever saw, and the reception committee will meet you on the street, particularly if you come at night, and show you the sights, the place where the town caved in, and the explosion on the lake front, and the turning Masonic Temple, and turn it around for you. But honestly, we want you at Chicago, and I thought I had better get my word in early.

Secretary Randall: We have written invitations of a very cordial nature from about six different cities, including St. Louis, Chicago, Columbus, Ohio, Milwaukee, Wheeling, and Jamestown, Va., where they will have an exposition. We have become very popular, you see, and are in demand. While St. Louis is represented on Old Glory over here on the right, we have never held a convention there. I should judge we will have to have another banner like that next year, and it won't surprise me much if St. Louis is the first name to be placed upon it.

Fred Talbot, St. Louis: If you will come to St. Louis, we will pay for the new banner. (Applause.)

President Copeland: Does any one desire to give us something on the Signs of the Times? This is a very interesting subject.

Mr. Ittner: I wish to say that the signs of the times and the import of the times are methods and means by which the American boy can learn a skilled trade.

Convention adjourned until 9:30 Thursday morning.

SECOND SESSION.

Thursday Morning, February 8, 1906.

President Copeland: Gentlemen, you will kindly come to order.

Mr. Ittner: If the convention is in order, I have a communication from the St. Louis clayworkers, which I will offer, and ask to have read and referred to the Executive Committee. I will ask Mr. Randall to read it.

Invitation to Hold Next Convention in St. Louis.

St. Louis, Feb. 5, 1906.

To the Officers and Members, National Brick Manufacturers Association.

Gentlemen:—The Clayworkers Association of St. Louis, Missouri, hereby extend to The National Brick Manufacturers Association, now in session at Philadelphia, a most cordial invitation to hold their next annual convention in the city of St. Louis, a city made famous the world over, by the World's Fair of 1904, long since made famous through its warm and open-hearted hospitality and ability to entertain Conventions. During the score of years of the existence of your Association, most of the principal cities of the country have been thus honored by your Association, in fact, some have been twice thus honored.

Our clayworkers, with all their varied industries, in the city of St. Louis, have never before, been as united as now, and we feel confident, should you do us the honor to accept, this, our invitation, extended in the spirit of amity and universal brotherhood, that it will not only be the means of cementing still closer the bonds of our local interests, but also be productive of much enjoyment and profit to our Association.

We feel that the unrivaled hospitality of our city for entertaining bodies, such as yours, will render any special pledge for your happiness and comfort while in our city, unnecessary on our part, except to say that we shall bend our every effort to outrival our past record in administering to your comfort and welfare; and finally we want to admonish you not to forget the ladies, to be more specific, we mean your mothers, wives, sisters and sweethearts.

Very respectfully,

ST. LOUIS CLAYWORKERS ASSOCIATION.

ANTHONY ITTNER, President.

WM. F. SCOTT, *Secretary.*

Secreary Randall: I see the man who distributed the tags at the banquet last night, has just entered the room. I went around tagged and people thought I was jagged. (Laughter.) Perhaps Dixie Scott may have something to say.

Mr. W. F. Scott, St. Louis: I did not intend to say anything at this time. I do not know that I can add anything to that written invitation, except that we will all be very glad to meet you in St. Louis, and we want everybody to come. I think I can say for the people who are interested in the clayworking industries of St. Louis that everyone of them want to see all the clayworkers of the United States there. We can take care of you.

President Copeland: I will ask the Secretary to announce the first order of business for the morning session.

Secretary Randall: The first in order on the morning program is a paper by Mr. G. M. Springer, on "The Business End of Brickmaking."

Mr. G. M. Springer, Buffalo, N. Y.: If my hand seems a little shaky and my voice somewhat unsteady this morning, do not think it is dissipation. It is simply the good fellowship I have been passing through in the last few days. I have shaken hands with so many friends that I have the "shakes." (Laughter.)

THE MARKETING OF THE PRODUCT.

By G. M. Springer.

Mr. President and Gentlemen:—

Friend Randall is beyond question a secretary par excellence, but the best men make mistakes, and he proved himself only human when he asked me to write a paper on "The Business End of Brickmaking" or the "Marketing of the Product."

Of course, as my hearers are all members of the N. B. M. A., we will assume that the quality of the product is all it should be, but even when that is the case it is sometimes hard to convince your customer. I remember making a shipment of about two hundred thousand hard brick to a certain division engineer of a well known road at a point nearly two hundred miles from Buffalo; it was a rush inquiry and a rush order, so imagine my surprise some three weeks after shipments were completed, to receive a message from the purchasing agent that the brick were rejected, and asking me to go on and see them.

I started about 7 P. M., got nearly half way there and was compelled to change cars and wait three hours for connections, finally arriving at my destination at 5 A. M. on a cold morning in the middle of winter. I managed to find the engineer some four hours later. He was a good fellow socially, but told me the brick were absolutely unfit to use, so you can imagine my surprise when we arrived at the pile to find a first class lot. When requested to specify what the trouble was he informed me very gravely that there were a lot of brick in the pile which he could not use in the face of the wall, which, by the way, was a machine shop, about a mile and a half out of the city. I informed him, gently, but firmly, that he was buying common building hard—not Kittanning number ones, but he had been to college, read all about brick, and knew infinitely more about them than I, and his dictum was that he would not use *any* brick unless every one in the pile was fit for the face of the wall.

He had reported the facts to the Chief Engineer of Maintenance of Way who had approved his finding and my only recourse was to hire men, reload the brick and ship them to—any old place. As that involved some $700.00 in freight and labor, I asked him who the Chief Engineer was and where he lived, and insisted on his calling him up on the long distance 'phone, and ascertaining whether he would be in his office the next morning. The answer was yes, but it will do you no good to see him as they are rejected, and he told me to tell you so. Nevertheless, I took the next train to headquarters, another hundred and odd miles away, where I arrived about 9:30 P. M., two hours late, nearly starved and slightly mad. When I called on the gentleman the next morning, I found a gruff, straight from the shoulder personage about sixty years of age, one of the practical arbitrary kind who had won his way by pure force of character and ability, and I knew that if I could make him listen to me it would be all right, but the rub was to make him listen, for he told me gruffly it was no use, the brick were rejected and that settled it.

I told him just as gruffly that while he was entitled to his opinion, I was entitled to mine, that I had come there to give it to him and he couldn't stop me unless he threw me out, which seemed to meet with his approval. I stated my side of the case, told him his Division Engineer was a mighty nice fellow but knew about as much about brick as a yearling heifer, would not know whether they were hard unless some one hit him with one, and might think they were good to eat until he had tried to masticate a few. He occasionally tried to interrupt me but I informed him sternly that I had the floor and he must keep still. When I finished he changed the subject. I prescribed for a hard cold, of which he was the unhappy possessor, listened to the story of his life patiently, kept quiet while he informed me of his opinion of purchasing agents, and finally just as I arose to go and asked incidentally what he was going to do about the brick, his answer was "we will use 'em."

Another case in point arose recently; we had a million order for a Government job, two hundred and fifty miles away, one third of which were to be selected for size and color for face of wall, and by the time the contractor was ready to commence laying there were nearly half of the brick there. He traveled eighty miles, taking sixteen brick layers with him, only to be informed by the Post Quartermaster, that the brick had been rejected by him, he had reported to Washington, been sustained, and the matter was out of his hands. Result. Bricklayers shipped back and a message to me to come on.

When I arrived next day I found the Quartermaster was a perfect gentleman, who admitted that he knew absolutely nothing about brick, but said he had tested them according to rules laid down in the "Manual" and could not find a single redeeming point. He produced a telegram from the War Department, confirming the rejection, and as the matter had plainly gone beyond him, I had him mark two samples and write a letter that same were the brick referred to, and started the contractor off for Washington. The result was a letter from him shortly afterwards as follows: "I have the pleasure of announcing to you that the decision on the brick question was very much in your favor, with an expression from Col. ————, that he wished he could always get as good."

These two instances are given to illustrate my statement that no matter how good your product, you are bound to "get up against it" occasionally, but if your selling end is what it should be, you can usually win out. When you are right never give an inch, and when you are wrong, admit it frankly, and do your best to repair any damage—that has been my policy, and after eight years experience, I can say honestly that it has always won out.

Some of the manufacturers seem to think any one can sell their output, but the right man is just as important there as the right man at your kilns, and in the fierce competition of to-day, you must be properly equipped from start to finish, consequently when you find him, cherish him as he deserves, encourage him, and when he makes an unusually good sale let him know that you appreciate it; I know of a 15,000,000 contract that was placed some time ago at a price aggregating $7,500.00, more than was authorized, and that $7,500.00 did not bring even one word of thanks, while in another instance a yearly balance sheet showed $4,000.00 more profit than was expected from the current price at which sales were supposed to be made, and when one of the firm asked where it came from, and received an explanation that it was from car shipments at points where competition would allow a little better price, his query was what business have you to charge more than we tell you to?

G. M. Springer, Buffalo, N. Y.

The same man sold over $900,000 worth of brick in a given time, had full charge of all credits and charged up to profit and loss the magnificent sum of less than $10.00, yet shortly after, when prices fell off some, there was a gentle hint given him that his salary would have to be reduced, but he declined to entertain the proposition, and was backed up by a majority of his concern.

Business in the Buffalo market has been good as far as output went, but owing to senseless competition, prices have been altogether too low. Nevertheless our company has paid the yards from which purchases were made a higher average price than our competitors have sold for, has met the competition of others in cases where we had to in order to retain the customers we valued, and after everything was charged off, including bad debts, we show a fair percentage of profit, and this was accomplished by watching closely what was going on in surrounding territory, knowing about what competition we had to meet on each job, and getting the best price circumstances would warrant.

In the case of the Government job, referred to, we got more money than our competitors offered to sell for because we had some friends in the supply line who were friends of the contractor, and they told him that he could rely on our statements and promises, that brick would be as per sample and shipments would be made as agreed. We never miss an opportunity to help our friends out and have received many an order through assistance they have given us.

If there is any merit in my remarks, you have undoubtedly discovered it, but it might be a good plan to recapitulate what I consider its main feature, viz, hire the best man you can obtain to sell your product, pay him as he deserves, back him up in his promises, make the very best brick you know how, and if by any chance there is cause for complaint meet the same fairly, doing as you would be done by.

Do not be so anxious to sell that you are not pretty sure where your money is coming from, and as your competitor is bound to sell his goods, do all you can to see that he gets the customers you do not want. (Applause.)

General Discussion.

President Copeland: We have all enjoyed this interesting paper, and will be glad to hear from some of you in the discussion of it. I would like to hear from Mr. Townsend.

O. N. Townsend, Zanesville, Ohio: I do not know that I can say anything more than has been said in the paper. It contains about the best advice I have listened to in years on this subject.

Mr. Ittner: I like Mr. Townsend, want to say I appreciate this paper very much, and find no criticism to make except the paragraph where he says to let your competitor have all the customers you dont want. I do not think that is exactly Christianlike. (Laughter.)

E. J. Mathews, Seattle, Wash.

Mr. W. P. Blair: I think everybody is keeping quiet because there is no criticism that could be directed toward that paper. I think the writer of that paper should be commended. I think I never heard a paper that was short and to the point and contained more striking and absolutely good advice in it than was contained in that paper from beginning to end. I think this paper should be the creed of the selling end of the brick business.

President Copeland: If there is no further discussion of this paper, we will pass on to the next.

Secretary Randall: I want to say before I announce the next, that Mr. Springer represents a working organization at Buffalo, N. Y. It would not surprise me a bit if we got an invitation to go to Buffalo next year before we get through here. The brickmakers of Buffalo know how to handle their business in a business like way and if any of you have experienced any difficulty in that connection, or want to organize locally, you will do well to buttonhole Mr. Springer. The next is a paper, "Drying Brick by Waste Heat from Up-draft Kilns," by George F. Clippert, of Detroit. One of the few regrets of the occasion is that our friend George Clippert is not here, but his brother Charlie is and I am sure that the President will give him an opportunity to talk, after I have read the paper. All of you who attended the Detroit Convention will remember George and Charlie Clippert. They were among the first to install the waste heat system with up-draft kilns. They are using common Dutch kilns, and they are using the waste heat from these kilns, as the paper will tell you.

DRYING BRICK BY WASTE HEAT FROM UP-DRAFT KILNS.

By Geo. H. Clippert, Detroit.

Dear Mr. Secretary:—

Complying with your request of the 16th. inst. I set down the following data regarding the waste heat system of drying which we installed in the fall of 1904.

We have six up-draft kilns, set fifteen feet apart in a row. These kilns are thirty feet wide and fifty feet long, inside measurement; each having a capacity of three hundred and seventy-five thousand brick, which are set forty-seven high and are burned for one week. We use coal and coke for fuel and it takes about a week to cool the brick after burning.

To utilize the waste heat we have a duct, five feet by four feet, leading from the fan to a main duct of like dimensions which extends in front of the six kilns their entire length. To this main duct are connected others thirty-five inches by thirty-six inches, one for each kiln, running lengthwise under the middle and provided wiith openings into all but the two outer arches. These openings are brought up to the level of the kiln-floor and vary in size from six inches by thirty-six inches at the end farthest from the main duct to six inches by twelve inches at the end nearest same. As we have fifteen arches to each kiln it is evident that there must be thirteen openings in each duct, and in properly graduating the size of these openings lies the whole secret of obtaining an even amount of heat from each arch.

We have a fan twelve feet in diameter, with openings on each side. This draws air on one side through a section of coils in which we circulate our exhaust steam, and on the other side heat from the cooling kilns. By this means we are able to obtain a week's supply of heat, whereas, if we drew heat from the kiln only, we would exhaust our supply in three or four days, and the more rapid reduction of temperature would result in injury to the brick. Attached to the duct, leading to the fan, is a small furnace designed by the L. E. Rodgers' Engineering Company, and we use same when we have no kilns cooling.

All the ducts are built of common brick, thus making their construction comparatively inexpensive. The main duct is covered with tee-iron and brick and those under the kilns are arched. In connecting the kiln-ducts to the main duct, we use a semicircular britching twenty-four inches by thirty-six inches and find it a very satisfactory arrangement, obviating the use of dampers which will warp and leak.

We connect the kiln to the fan as soon as the last firing has been done, and the furnace doors sealed tight with mud. Our output at this plant is sixty-four thousand soft mud brick per day, and we maintain a temperature of about two hundred degrees in our dryer.

Summing up our experience with this system, I can say that it has proven very satisfactory from the time of installation, and has saved us some money. Up to date we have found no defects and can think of no improvements that could be made.

In the light of this experience, I would say that any brick manufacturer who has a dryer, and any kind of a stationary kiln cannot afford to let the waste heat get away. I believe, however, that any one contemplating the installation of such a system should consult some competent engineer before proceeding with the work.

In conclusion, I desire to extend a cordial invitation to the N. B. M. A. members to visit our plant at any time, assuring them that we will be very glad to see them and do our utmost to make such a visit both pleasant and profitable.

General Discussion.

President Copeland: We will be glad to have Mr. Clippert come forward.

Charles Clippert, Detroit: I do not know anything that I can add in addition to that paper, but I will of course be glad to answer any questions that may be asked.

E. S. Morse, Washington, D. C.: Do you find any difference in the color of the top courses of brick since installing this system?

Mr. Clippert: No, we do not notice any difference. We do not cover the kilns. I believe if we had some system of covering them we could get two or three days more drying, but I find with the waste heat system, the tendency is to hold the heat in the kiln and helps our brick. They are harder, and I think have a better color.

Mr. Townsend: Where do you attach the duct?

Mr. Clippert: We have a main duct running the entire length of our six kilns and we draw from the bottom. The main duct runs the entire length of the six kilns, from end to end and then we have branches leading from the main duct to each kiln. The main duct is five feet by four feet, and the other ducts are 36 inches wide. We have a system planned by Mr. Rodgers of Chicago. We have what we call a goose neck which is made of sheet iron and with which we connect the kiln and the man-hole. It is the work of but five or ten minutes to change this goose neck from one kiln to another.

Mr. A. V. Sturgeon, Suffolk, Va.: What per cent. of heat do you think you get from these cooling kilns? What per cent. of brick do you dry when you are running regularly? I mean, what per cent. of the brick you make do you dry?

Mr. Clippert: We dry entirely by the waste heat, but use the exhaust steam in these pipes in order to help along, so we do not draw as hard on the kiln as if we had to depend entirely on the kiln, the same as drawing from a down-draft kiln. I believe if we had a cold air intake near the fan and could take in cold air on the other side of the fan and let it come in over the arches we would increase the temperature to about 120 degrees. Therefore if we dried directly from the kiln we would get too high a temperature.

Mr. Sturgeon: When you are running regularly, you get enough heat from the cooling kilns to dry the next kiln. Is that right?

Mr. Clippert: Yes, but in winter our kilns cool off more quickly.

Mr. Sturgeon: Would it be possible to take that heat from the kilns and put it into a dryer that does not have a coil to run out in the bottom of it?

Mr. Clippert: Certainly, but you would have to add cold air to it between the dryer and the kiln. Our brick will not stand over 200 degrees temperature at the hot end.

Mr. Edmund Webster, Philadelphia: I do not know whether I understand. Are they soft mud brick or stiff mud brick and so are partially dry before they are set in the kiln?

Mr. Clippert: They are soft mud brick, and we use the heat in the dry kiln.

C. P. Mayer, Bridgeville, Pa.: My number is 205, and I am from the State of Allegheny. This discussion interests me because we are now contemplating the construction of the waste heat system at our plant. I want to say we are infants in the business. It will be two years in March since we began the erection of our plant, and incidentally I would say that while we are young, in our swaddling clothes as it were, we have had one eye tooth cut. (Laughter.)

W. P. Blair: Are you sure it is but one? (Laughter.)

Mr. Mayer: I will add, however, that it cost us $5,000 to cut that one tooth, (laughter) but we finally got it through and it is a good one. If we get a whole outfit later we will be able to masticate the brick business sure. In the discussion here on the previous subject, that of the "Business End of the Brick Business," I was a little bit backward in saying anything on the subject by reason of our being so young in the business, but I was informed that the brickmakers have a habit of getting the best prices at home that they can get, and then shipping the surplus into the other fellow's market at any price they can get. (Laughter.) I was wondering if that was true. This looks to me to be a pretty intelligent lot of men, and I want to ask if it's really true that you are shipping your surplus brick into the other fellow's market and undercutting the other fellow's price. I wanted to know if that was really true. (Laughter.)

President Copeland: The Assistant Secretary remarks that "silence gives consent." (Laughter.)

A Member: That is some more of the Christianity.

Mr. Mayer: As far as I have gone into the business, I have not met with much Christianity.

Mr. Blair: Is that what you were looking for?

Mr. Mayer: Not exactly. I have been in the builders' supply business and the lumber business, and while I knew that we lumber men did these things—get the very best price we could at home and then go into the other fellow's market and sell at any price we could get. You know what that does to the other fellow. He comes back and does the same thing to you. Possibly that is the way with the brickmakers. I have received a telegram since I have been here from my son at home in which he says he has a proposition for an order of 70,000 brick for the city of Cleveland offering $9.00. Well, now at home we would not sell at any such price, and I was wondering whether I had better not take that on the Cleveland fellows. (Laughter.) If I did not do anything else, it would let the Cleveland brickmakers know we were in the business. I want to come to another question and that is the subject before the house at the present time. I wanted to ask the question if it was practical, or if it had been done in any previous case—taking the heat from the burnng kiln, instead of the cooling kiln. I can see that anybody can take heat from the cooling kiln, but can he take it from the burning kiln.

George Clippert, Detroit, Mich.

Mr. W. P. Blair: Why do you want to take it from the burning kiln?

Mr. Mayer: Supposing you do not have kilns enough to run your dryer, and you have kilns burning, but none cooling?

Mr. W. P. Blair: You can do it just as well before as after.

Mr. Grimes: Take it out of the flues.

Mr. Purington: You can do that with a down-draft kiln, but with an up-draft kiln you cannot draw it from the bottom.

Mr. Mayer: I want to say one other thing. I sat in the banquet hall and heard them talking last night about the City of Brotherly Love, and that is what made me say when I started out that I was from the State of Allegheny. When I say that I mean Allegheny County. We have seceded from the State of Pennsylvania, and we are going to have a State of our own. We do not want to belong to a State full of corruption.

A Member: How about that banker over there in Pittsburg?

Mr. Mayer: That was due to Pennsylvania influence. We are not infallible even in our county. Once in a while we have to have our eye teeth cut, and that is an instance. In Philadelphia here we hear about the great reform movement. The way I look at that is this. By that reform movement they have plead guilty to corruption. I never would have guessed it before. They plead guilty and there is now an investigation going on in the State, investigating the conduct of the officers of the State that shows rank corruption, a stench in the nostrils of every decent citizen, and for that reason we have seceded and have a State of our own. I want to say something further about the matter. We do not want to belong to the "kickers," we do not want to belong to people that will kick against the administration of the city and the State, and for that reason we are going to get off by ourselves. We are not accustomed to kicking. When we want anything pertaining to railroads, we draw up a bill, and get the Pennsylvania Railroad company to put its stamp of approval on it and that settles it. (Laughter.) If we want to get insurance legislation, we draw up our bill, get the insurance company to put on it its stamp, and there you are. We don't want to belong to the kickers, I tell you.

President Copeland: While we are enjoying this talk very much I will have to ask the brother to keep to the discussion of the question before the house.

W. S. Purington, Galesburg, Ill.

Mr. Mayer: All right, Mr. President, I expected to be called.

Mr. Blair: I would suggest that our Secretary notify the member from the "State of Allegheny" that he will be expected to give us a paper a year hence giving his experience in cutting the rest of his teeth. (Laughter.) I think it would be very interesting for all of us.

Mr. Mayer: I would like to say in answer to the gentleman who suggested a paper from me on cutting the balance of our teeth, that if they all cost as much as the one we have already cut, it will be an expensive set.

D. P. Guise, Williamsport, Pa.: Mr. Mayer put the question to the convention to know if it was possible to use the waste heat from burning kilns as well as from cooling kilns. I want to state that we have that under consideration and expect to fully demonstrate that now in a very short time that it can be done. Some one intimated that it could not be done.

Mr. Purington: It can not be done in an up-draft kiln.

Mr. Guise: In a down-draft or up-draft either one. The heat can all be utilized, at least most of it. About 60 per cent. of that heat can be used in drying brick, which is a large saving, as you all know.

Mr. Jacob Klein, Baltimore: I have the same system as that described in the paper, and I do not think I can add anything to what has been said. I can see where I made one mistake. I made my flues and ducts too small, and I have had considerable trouble this winter in getting heat for a sufficient time, only get from 24 to 36 hours, but I now see this is owing to the size of the flues, and therefore I appreciate that paper very highly. When I go home, I shall at once enlarge my flues. Others no doubt have had the same trouble. Any one who intends to construct a waste heat dryer of that kind must be very careful in the construction of the flues. They cannot be too large.

Mr. Guise: The time intervening between the starting up of your plant and the drying of your kilns. That time must be provided for, and how are you going to provide for it in the waste heat from the cooling kiln? You cannot do it. Now, I hope to do that, and have heat from the time we start the plant.

Mr. Purington: I think I can answer that. In the use of down-draft kilns we of course have no heat at certain seasons of the year. One way to overcome it is to put in an extra furnace and use coke, or leave a certain number of kilns unburned until such time as you wish to burn, or fire a kiln that has already been burned, as we have done successfully, leaving the brick in the kiln and letting the heat go straight up through the brick that have been burned without harming the brick.

Mr. Clippert: In reference to what Mr. Klein has said. We did not get ours right the first time. We had the same experience, and we cut an eye tooth. It all lies in getting your flues right and getting them laid right. We made ours too small, but if you get your flues of the right proportion, you will dry evenly all over the kilns. You can tell that by going up on top of your kiln at night and see if your kiln is being drawn evenly by looking at the flame. We started by drawing the heat from the first three arches, but after changing the flue around and experimenting we now draw evenly. We have a duct leading through the center of the kiln and there is an opening to each arch hole, and we draw the heat down into this duct.

Mr. Klein: Is this opening in the center of your arch?

Mr. Clippert: Yes sir.

Mr. Klein: In order to suggest some little improvement. I put my opening in the benches and arch them over.

Mr. Clippert: We do not cover ours at all.

Mr. Mayer: I want to ask another question. I understood from what was said that you were using an up-draft kiln.

Mr. Clippert: That is correct.

Mr. Mayer: Would it be necessary to put a tunnel the full length of the kiln in a down-draft kiln the same as in an up-draft kiln?

Mr. Blair: You would have to do that.

Mr. Mayer: We use a rectangular kiln about 80 feet long, and we dry from tunnels beneath the kiln floors, but to put in a duct the full length of the kiln is a different proposition.

Mr. Blair: Many make a special duct that goes the entire length of the kiln with openings into this duct and draw off the heat in this manner.

President Copeland: This has been a very interesting discussion, but I think it will be well to pass on to the next.

Secretary Randall: The next on the program is a paper on "The Permanent Improvement of Country Roadways," by Mr. Charles Deckman, of Cleveland, Ohio. Mr. Deckman is not here but his partner, Mr. Duty is, and if he is in the room I wish he would kindly read this paper. He does not seem to be here, so I guess it is up to me.

THE PERMANENT IMPROVEMENT OF CITY AND COUNTRY ROADWAYS.

By CHAS. J. DECKMAN, Cleveland, O.

Gentlemen of the Convention:—

The permanent improvement of city and country roadways is a question that embraces many conditions. To produce a permanent, durable, and truly economical improvement is of the greatest importance. Our friends, the advocates of Macadam, Bitulithic, Asphalt, Asphalt Block, Wood and other combination pavements—patented or otherwise—have the happy faculty of producing the smoothest argument as to the durability, economy and beauty of their respective pavements of all others in the business, but it rests alone with brick to demonstrate all of the claims made by them—and more—in a practical demonstration by service. It is in the matter of permanent improvements of city and country roadways with brick, that this feeble effort will deal with.

The construction of brick pavements to combine all the essential qualities, particularly durability and economy, may vary in different localities under different conditions. In the city of Cleveland, we have the finest roadways in the world paved with brick. On a recent visit to Cleveland of a leading civil engineer of one of your prominent eastern cities, he made this remark, "I have seen many miles of paved brick streets, but today I have seen the first brick paved streets."

The character of the brick pavements, referred to, differ only as to foundation. In the major portion of these improvements, the foundation consists of sand which is the natural soil and, after such preparation as is required under the specifications, the roadway is paved with brick, inspected, rammed, rolled, grouted with a cement grout filler, covered with sand, and the improvement closed to traffic until the same has had time to set properly, and the roadway is then thrown open to traffic as a finished pavement, and this is the kind and character of brick paved streets—most largely used in the residence districts—and which, while not better than the best, are better than the rest. The improvement of heavy traffic streets differs only in that a concrete foundation is used instead of sand, and in each case the same smooth, beautiful, durable, substantial and economical results are obtained.

These same results may be obtained in any section of the Universe under like conditions. Foundations for improvements cannot be too good, yet many civil engineers, in localities where conditions heretofore referred to exist, do not know the difference between a natural soil that will produce a lasting and economical foundation and an uncalled for expensive foundation of crushed stone, slag, cinders or concrete, when the absence of which would lessen the cost and at the same time produce the results most desired—durability, beauty, economy.

I would not have it said or understood that I am not in favor of good foundations, but it is a well-known fact that many thousands of dollars are frittered away in providing for substantial stone or concrete foundations because it has been the Civil Engineer's idea —when a most thoroughly substantial and satisfactory pavement has been laid by the contractor with from 25 to 75 per cent. of the proposed expensive foundation eliminated from the work, yet paid for by the taxpayer—and all because the contractor knew from a practical knowledge the results to be obtained from the material at hand better than did the Civil Engineer.

Under this argument and with these methods with practical, efficient officials, we, in Cleveland, have the best paved streets in the world.

In that vicinity are manufactured 75 per cent. of all the paving brick and block manufactured in Ohio, and all the reputable manufacturers are producing material of satisfactory service and quality, and this has been brought about by the competency of the manufacturers and efficient inspection both at the plants and on the work.

With reference to our country roadways. We have in Cuyahoga County 100 miles of brick paved roadways, varying in width from twelve to thirty feet. These roadways are constructed largely on one side of the highway—the other side being a dirt roadway on an even grade with the paved portion. The nature of the soil in the majority of these country improvements is of clay, and upon the sub-grade is laid a crushed stone or slag foundation eight inches deep, the preparation of which is in common with all similar foundations. All the proper under-drains, retaining curb, etc., brings us to the paving of the roadway with brick. The brick are laid, inspected, rolled, grouted with cement grout filler, and the pavement covered with sand and closed to traffic for ten days, when the same is opened as a finished piece of roadway for public use.

The brick, or block, used are what is known as "Lug Block," there being 1-8 inch projections on the four corners of one side of the block about 3-4 inch from the face of the block and about 1 1-4 inch from each end. These lugs are often made of raised letters which form the lugs and the name or brand by which the block is known on the market. The object of these lugs is to permit the cement filling to reach the bottom of each block and form a bond uniting the entire surface of the paved roadway into one unbroken plane.

The ways and means for constructing these country roadways is provided by a uniform State Law, effecting all roadways in every county in the State, and authorizes the County Commissioners to build them and distribute the cost by assessment against the abutting and all other property in the county in such fixed ratio as seems for the county's best interests.

The cost of these brick paved roadways, averaging sixteen feet in width, is about $20,000.00 per mile. The cost of those in the city on sand foundation from $1.15 to $1.25 per square yard, and from 50 to 60 cents additional for concrete foundation.

In what I have said regarding brick pavements or their construction, it has not been my purpose to define or point out the specific manner of construction. You all well know how there is no better foundation than concrete, and the opinions of Civil Engineers of the proportions of material to compose the best concrete are about as numerous as the parts themselves. I do believe, however, that a uniform specification should be adopted for brick paved roadways—by this I do not mean that every brick pavement should be laid on a concrete foundation, but that every foundation of whatsoever kind should be uniform and of the best of its class—and this be the uniform foundation for brick under that class.

In this position there is room for argument which may be of more interest than further reference by me.

General Discussion.

President Copeland: I would ask Mr. Grimes, of Portsmouth, Ohio, to lead in the discussion of this paper, and before the discussion takes place, I desire to say that Mr. Deckman has sent with his paper a copy of the contract and specifications used in that territory, and it would be well for those of you who are interested to write and get from him a copy of the document and also a copy of the law under which the people of that section build their roads.

Chas. J. Deckman, Cleveland, Ohio.

Mr. Albert D. Klein, of J.: I would suggest that the paving brick people send a copy of those specifications to the various automobile clubs. They will find them the best advocates for brick paved roadways.

Mr. H. S. Grimes: Mr. President and Gentlemen of the convention. The paper just read by the Secretary written by Mr. Deckman is a good one, no question about it. However, it is confined, as you probably have observed entirely to the city of Cleveland and the surrounding territory. It fully demonstrates that by properly looking after the material after it is once made, the same situation that exists at Cleveland with paving brick can exist in almost every other city in the United States. The great trouble is, as I have found through my experience in the manufacture of paving brick extending over a period of about eight years, is that after a manufacturer makes a good brick, and he knows it is a good brick, that seems to be the extent of his efforts so far as placing the brick in the ground is concerned. We have all sorts of engineers, some of them know their business and some of them, I must say, do not. Some of them are willing to be educated, and some of them know it all and do not want to be educated. I believe the manufacturers about Cleveland have followed their brick from the time they leave the kiln until they are in the street or road. The others don't follow them up to the engineers and contractors until they are laid. We are a little too fearful of the contractor. We are afraid, to a certain extent, of the contractor. That should not be. We manufacture a good brick and know that it is all right and when the contractor does not put them down as they should be put down, we should call a halt. If you will do that, I do not believe there is a paving brick manufacturer in the United States who will not find it beneficial to himself and to all manufacturers. This is the condition at Cleveland where Mr. Deckman is. As manufacturers they have followed the brick from the time they leave the kiln until they are in the street or road. The result is they have supplied the city of Cleveland with brick way beyond any other city in the United States. There is no difference between the streets paved with brick and with asphalt, so far as smoothness is concerned, but the brick streets make a little more noise than the asphalt. It would be a surprise to some of you to see how beautifully paving brick can be used and put down if properly followed up.

Alfred Yates, Shawmut, Pa.

Since the Birmingham meeting of this Association, there has been born an organization of the paving brick manufacturers. This organization will not in any way conflict or interfere with this organization. On the contrary, it will be largely beneficial to this Association. The paving brick manufacturers have gotten together and I must say, in a remarkably short space of time have accomplished wonders. They have gotten together in such a way, that they are going to hereafter look after the paving brick interests of this country and that will help this organization. The oldest members of this Association are members of the National Paving Brick Manufacturers' Association. Since coming to this convention, they have interested New York, Pennsylvania and New Jersey in the East, and have been able to secure their co-operation. They organized yesterday a local organization for the purpose of coming into the National organization. With this state of affairs existing you can see, gentlemen, there will be no question but that there will be a time when we will be in as good a position as the people of Cleveland.

I do not say that Cleveland is the only city in the United States to have good brick paved streets, but I refer to it because this paper refers directly to that city. I believe I have covered all the points in the gentleman's paper with the exception of wear. He says that in some instances sand foundations in brick pavements are not as good but can be used equal to grout. Now I disagree with him very materially. If you are going to build a house you want a good foundation. The foundation is the superstructure on which everything rests. There is no question in my mind but that the grout foundation is the best under all circumstances and conditions. You are safe with a grout foundation and you are not safe with any other. When I say grout, I mean concrete. I usually call it grout. Mr. Deckman has said that in some town they used a sand foundation, just an ordinary foundation on a sand bed. This may do, but I believe if the gentleman will also put in a good foundation for your brick you will find in the course of time that it is to your interest.

Mr. O. N. Townsend: I will have to disagree with my friend Grimes in regard to the foundation. Zanesville has about twenty miles of streets paved with brick on a gravel base. Cleveland has miles of street paving on nothing but sand. Sand foundation is about as good as gravel or concrete foundation, but it must be on a solid bed. I like that paper of Mr. Deckman's because it advocates materials that can be obtained locally, either gravel, or stone, as well as concrete.

Mr. W. P. Blair: I do not want to go into this subject very deeply, because it will rob other papers and other discussions of the time that should be devoted to them. I want, however, to bring out one thing in connection with the Cleveland situation. The brick streets and brick roadways of Cleveland and Cuyahoga County, in which the city of Cleveland is located, has been so eminently satisfactory to the people of that city and that county, that in the city and county combined there are over 250 miles of brick roadways to about 20 miles of any other kind, with scarcely any expenditure in all these years for maintenance. Now just a word in regard to the subject of foundations. It is a peculiar fact, but a fact none the less, that in the construction of brick paved roadways so far as foundation goes, that the specification under which you can get the very best pavement out of brick that is constructed out of anything that has been used in the present or past, is the one requiring a concrete foundation. There is a choice between the very best and the medium, the same as there is with reference to a suit of clothes. If any locality does not feel able to pay for the very best and fanciest suit, as it were, he can take his choice in keeping with his purse, and get a very good and satisfactory and durable street for the money expended. A good brick street upon a country roadway can be constructed almost anywhere through the United States without any concrete foundation, other elements entering into the construction being carried out carefully, and you cannot say it of any other material in the world out of which roadways are made. Such a street, such a roadway, can be constructed at the least possible minimum cost out of brick, and last longer than any child will live that is now breathing the breath of life in the United States. I doubt not that the country roadways of this country and the brick streets properly constructed of proper material will last in every instance more than 100 years. This suggestion leads me to say something else and I thing it ought to be said right here, and that is in regard to proper material. I undertake to say one word in defense, or rather in behalf of the paving brick men of this country. From 95 per cent. of the paving brick manufacturers of this country you cannot buy an improper material to go into the streets, no matter what price you offer. (Applause.)

Alfred Yates, Shawmut, Pa.: Mr. President and gentlemen. Referring to Mr. Townsend's remarks about the sand foundation. From the experience I have gained in the paving brick business it little matters what the foundation is so long as it is solid. If you have a good solid foundation to lay your brick on and then carefully grout them, you are sure of a good job. Once upon a time I advocated six inches of concrete, but I lost the job because the other fellow could figure cheaper. Referring to Mr. Blair's speech, as I understand it, there are brick streets down in Holland that have been down between eighty and ninety years and are now in a good state of preservation.

Mr. Blair: There is an announcement I wish to make in answer to a suggestion at the beginning of this paper, and I beg to say it is for the information of all those present, and those who may be interested, that the paving brick organization, of which mention has been made, will be in a position within sixty or ninety days to give you upon application, or any one in the United States or in the world, specifications for the construction of brick streets and roadways that will be absolutely reliable and be endorsed by 99 per cent. of the paving brick manufacturers of the country.

Mr. Guise: In regard to this matter of foundation, and also the filling of the joints is interesting. I have put down brick streets on gravel or broken stone and on common dirt grouted with cement, and I do not care how poor the material underneath, if it is properly rolled with a heavy steam roller and thoroughly grouted with cement, it makes one continuous sheet which accounts for the rumbling noise spoken of. I know this to be true from experience, that you cannot break it with a wagon loaded with ten tons passing over it, on a foundation of gravel, broken stone, or even a common dirt road foundation, thoroughly rolled, provided, however, that there is no place settled where it has been opened to put in a sewer or house connections. Ordinarily it will stand no matter what the foundation. I venture to state that you could take a street and turn it up on edge, if you could get force enough without breaking it.

Mr. Grimes: My object in giving my individual opinion was for the purpose of bringing out the discussion we have had. I would like to ask the privilege of presenting to this convention a resolution previous to the reading of the next paper, if the president will grant that privilege.

RESOLUTION ENDORSING THE ACTION OF PRESIDENT THEODORE ROOSEVELT IN HIS EFFORTS TO SECURE BETTER RAILROAD RATE LEGISLATION.

Be it Resolved by the National Brickmakers' Association, assembled at Philadelphia, this eighth day of February, that we heartily endorse the President, Theodore Roosevelt, in his effort to obtain through Congress, now assembled, means and ways whereby such legislature shall be enacted so that the Inter-State Commerce Commission or other commissions that may be appointed, shall have power to so regulate railroad rates that there will be less discrimination than now exists.

Mr. Grimes: Now, Mr. President, I move that the rules requiring resolutions to be referred to the Committee on Resolutions be suspended and this resolution be adopted at once.

Seconded by Mr. Gregory and carried.

Mr. D. J. Christopher, Chicago, Ill.: I would like to ask a question of the paving brick manufacturers. It is my misfortune to have to throw out the brick that the paving brick manufacturers make. Mr. Blair says that he believes that 95 per cent. of the manufacturers of paving brick furnish brick proper for paving. Is it not a fact that there are grades of better and best in that 95 per cent.? The paving brick men that comprise that 95 per cent. may put the good with the bad. We may pave a street that has an exceedingly heavy traffic and put a bad brick on it and it will go to pieces. I know that from personal experience. Mr. Blair states that there will be specifications issued. That is a good thing. But in drawing up these specifications, I believe the brick men should be very careful and not get certain classes of brick in what you would call the hard wearing streets of the country. I think it would be a good thing for the paving brick association to have three specifications and classify them as A, B and C specification. In other words in a town of say 5,000 Class C brick will wear as well as Class A brick will wear in the city of Chicago, or any other large city where the traffic is heavy. I believe it is an injustice to the brick men to have them furnish a Class A brick in the little towns, and at the same time create an expensive pavement. In a city the size of Chicago we have to pay more for brick and it is expected that such would be the case. I think you will admit honestly that you have to charge more for brick that you will put down in the big town than the brick that you will put in the small towns, because the brick men themselves, right down in their hearts, do not believe it is necessary to furnish the same brick to the small towns, and they do not do it. I would like to ask Mr. Blair if he thinks he should furnish the same high grade any and every where.

Mr. Blair: I beg to say in reply to the gentleman from Chicago that I do believe absolutely and unqualifiedly that 95 per cent. of the brick manufacturers will furnish A1 brick. I do not care to go into a discussion just along these lines exactly, because the discussion is not nearly so fruitful as the proof. You give me the laying outside a five mile radius, if you please, of your heaviest traffic streets with the brick which 95 per cent. of the manufacturers will furnish, and it will stand the traffic in the city of Chicago longer than you will live. I can show you streets in cities in this country constructed of brick over which passes traffic absolutely the heaviest in the world, that have stood without chipping even to the slightest extent, for more than five years. Whenever a municipality will on the one hand guarantee that it will give me a bond in the construction of a street laid with our brick according to specifications that will remain unbroken, I will on the other hand be willing to subscribe to a guarantee and sign the name of my company to it that such a street will last for a period of twenty years.

H. S. Grimes, Portsmouth, Ohio

Mr. Christopher: I am glad Mr. Blair brought that out. But it is inferred that he refers to a ten mile or five mile radius from the center of Chicago, but it is also a fact that the brick men charge the same price for a radius outside that five miles that they do inside the five miles. They do not stop to think of the difference.

Mr. Mayer: Are any of the paving brick manufacturers laying their own product on the streets. Would not that solve the question of improperly or properly laying their brick. Why should they not lay their brick themselves?

Mr. C. M. Crook, Youngstown, Ohio: I have not talked with the other paving brick manufacturers, but would it not be well for Mr. Blair and Mr. Christopher to meet the paving brick men? We are all very anxious to meet the engineers. This is a matter of education, and I am sure we will all be glad to meet Mr. Christopher in room 4 any time this afternoon, say, after we return from the trip to the brick plant.

Mr. Ittner: I consider it a compliment to this body to have the engineers meet with us.

President Copeland: If there is no further discussion on this subject, I will ask the Secretary to announce the next number.

Secretary Randall: The next number is a paper, "The Rattler Process as a Safe Method of Disclosing the Permissible Absorption of Paving Brick," by Prof. Edward Orton, Columbus, Ohio. I will say in this connection that this is the paper that we get every year through our annual scholarship at the Ohio State University. Prof. Orton has in charge the work of the Committee on Technical Investigation. While the Professor is getting ready to present his paper, I have a resolution here which has been handed in by Mr. Ittner.

RESOLUTION FAVORING MUNICIPAL TRADE SCHOOLS.

Whereas, We have learned with much satisfaction that the Board of Education of the City of Philadelphia are contemplating the establishment of "Mechanical Trades Sschools."

Wherefore be it Resolved, That we, the National Brickmakers' Association in convention assembled, do most heartily endorse the effort of introducing into the Public School System, not only in Philadelphia, but in all cities of our country, schools in which the hand as well as the head can be educated with a view to produce self-supporting citizens and useful members of the community in which they reside.

Mr. Ittner: I do not desire to take up the time and attention of this convention for I know the value of its time, and I know that the session has been prolonged, and I want to ask for this resolution the same courtesy and attention with which you favored a resolution a short time since. In my opinion there is no reason why this resolution should go to the Committee on Resolutions. This resolution was handed me by a gentleman in this city who is deeply interested in the proposition, and I move that the rules be suspended and that this resolution be passed without referring it to the Committee on Resolution.

R. C. Merwin, New Britain, Conn.

Mr. Grimes: I second the motion.

Vice President Gregory, who had been called to the Chair by President Copeland, put the motion to the convention and it was carried.

Vice President Gregory: We will now hear Prof. Orton's paper.

THE RATTLING TEST AS A SAFE METHOD OF DISCLOSING THE PERMISSIBLE ABSORPTION OF PAVING BRICK.

Professor Edward Orton, Jr., Chairman of the National Brick Manufacturers' Association Committee on Technical Investigation, reported to the Convention an account of his investigation now in progress. He explained that Mr. R. C. Purdy, who was the secretary of the Committee appointed last year and who had expected to take charge of the investigation for the current year, had been called away as a teacher in the Ceramic Department of the University of Illinois and had been obliged to resign his connection with the Committee on that account. Professor Orton was therefore obliged to take up the work once more himself. The subject of investigation for the current year was as shown in the title. It was based upon a piece of investigation which he had already done in a partial manner in the spring of 1905, as a private matter. The results of this test were published by the American Society for Testing Materials. The investigation for the N. B. M. A. differs from the former in the fact that it is done on a very much larger scale, and that it is pushed to a very much greater degree of completeness, and it is hoped that the results, when finished, will be authorative and will not require further repetition of the work by others.

The report made to the Convention was only partial or preliminary, as the work is still in process. It was based upon the report made to the American Society for Testing Materials which was used in explaining the scope and purpose of this year's test, and which is reproduced herewith in full:

I. THE GENERAL STATUS OF THE RATTLING AND ABSORPTION TESTS.

In 1895 the National Brick Manufacturers' Association appointed a commission to study the testing of paving brick and to formulate standard methods for making such tests as they deemed useful. This commission, reinforced by various persons whom they drew into their deliberations at one time or another, did some good work, and their various reports have given to the public a set of methods for testing paving bricks which have been adopted more or less widely as standards by the engineers and municipalities of this country.

Their findings in brief were: 1st. That the rattler, or impact, or abrasion test, as it is variously called, is much the most valuable test of all for judging paving brick. 2d. That the absorption test is of little use, from the fact that danger from frost arises at different percentages of absorption in different clays, and also in the same clay, when manufactured by different processes, and, therefore, no limit of general application can be laid down. 3d. That the cross-breaking test is of little use, because it depends on factors of strength which are not seriously called into play in the use of paving brick. Its only use is in judging of uniformity of structure, and freedom from large interior flaws, and these facts are sufficiently developed by the rattler test, when made as prescribed. 4th. That the crushing test for paving brick is also useless, from the fact that no paving brick ever crushes from pressure in use in street. It may possibly fail from shearing stresses, though this is rare. It may disintegrate by frost, or by impact, but never by the rolling friction of heavy loads. Hence, any estimate of the real quality of a paving brick based on the crushing test is of no importance. 5th. In view of these conditions, a complete and rigid test of specifications as to how the rattler test must be performed in order to make its results comparable, was promulgated, and while methods for the conduct of other tests were given also, it was specifically stated that the rattler test alone was recommended for deciding the merits of competing materials.

The use of cross-breaking and crushing tests, though at one time common, has under the influence of these reports steadily declined until now it is largely abandoned. The truth and accuracy of the conclusions reached by the commission on the subject of the absorption test have been accepted in many quarters, but not by any means in all—possibly scarcely a majority. Engineers are still found specifying absorption tests for their paving material in all parts of the country, and brick manufacturers, especially those whose material will not endure the rattler test well, are often found advocating absorption as being the only safe guide to endurance in judging paving brick.

It is a common fallacy that bricks of exceedingly low absorption and therefore of highly developed vitrification, are the best and most enduring in street use. The life of a paving brick depends on two factors: 1st, the wear of traffic; 2d, the deteriorating effects of weather. A brick may fail from either cause—or from both jointly. The wear of traffic depends on the quality of combination of qualities called toughness. Resistance to weather depends upon a number of qualities, but chiefly power to resist the crumbling action of frost. To test the toughness, the rattler test has been devised and is generally conceded to be much he best method of measuring that property. For determining the frost resisting power, the common method is the absorption test, rarely supplemented by actually freezing samples when filled to their capacity with water.

The misconception to which reference has been made is that both qualities, toughness and frost resistance, are necessarily united and measured by the one test, viz., absorption, and that the highly developed vitrification, which engineers have been demanding and manufacturers striving to furnish, is really likely to represent good wearing power. The fact is that a highly developed vitreous structure, while favorable to frost resistance, and to weather resistance in general, is distinctly unfavorable to toughness, while the losses in street wear of bricks of average grade are so largely due to abrasion and impact, that gain of frost resistance at the expense of loss of toughness is fatal to their endurance.

Of course it is well known that no rock, either of artificial or natural origin, is wholly unaffected by weather. All go down in decay: but some go with great speed, while others are considered indestructible because they endure the little span of a human life without much visible loss of strength. In dealing with vitrified paving brick we are dealing with an artificial rock, generally of high weather-resisting power, and while it would in time be resolved by nature's forces back into its constituents, it will endure without apparent result the weathering of many, many years. Some brick were used for paving purposes in the first years of this industry (1885-1895) in this country which were far from being weather proof. They were unable to endure the frost without visible and rapid crumbling. But, so well has the public become educated on this point, that an instance of the use of soft brick in a street is now really rare.

This brings us to the fact that the deterioration of paving brick is chiefly by abrasion and impact—or the actual *wear* of traffic. And to provide material which is able to endure this kind of deterioration well, is the chief anxiety of the manufacturer of paving brick.

The ability to resist wear, or toughness, is a factor yet but little understood. It is not certainly known to be the result of any single element of mineral or any combination of such, in the bricks composition. Bricks of very diverse composition have developed excellent toughness. While on all sides it is admitted to be due to the combination of the constituent minerals of the clay by pyro-chemical process of burning, it is not known from what particular degree of combination the most perfect results accrue. The loss of identity of every mineral grain of the original clay, and the blending of the whole into a glassy matrix is certainly not desirable. Glassy bodies are never tough. Neither is it known whether the tough structure is produced by stopping the process of vitrification at a time when a fluid matrix of silicate matter has barely cemented the larger constituant grains of the clay into an coherent mass, or whether the combination should go on until the bulk of the clay has been brought into a viscous matrix which should then be so slowly cooled that out of it will crystallize a net work of new minerals, which knit the mass into a fibrous crystaline structure, similar to the natural rocks.

Whatever the facts may ultimately prove to be as regards the intimate causes of toughness in a vitrified clay body, the important thing for us all to understand is that for developing the toughness of a clay, it is just as easy to go too far in the burning as to go not far enough, and that overburned wares are certain to be brittle and weak., while underburned wares will be granular and weak. The former will chip, losing large flakes with each well placed blow, while the latter wears away by rubbing, or by blows, from the inability of the cementing matrix to hold the grains together.

Either structure will produce a poor street. The kind of wear will be different, and the wear caused by brittleness is apt to be less rapidly fatal than that caused by softness, but it is fatal to a smooth enduring street, just the same.

The position has been taken by the Commission of the National Brick Manufacturers' Association, that while low absorption and, therefore, good weather-resisting power does not carry with it the assumption of good wearing power, or toughness, the possession of good toughness as shown by the rattler test, is a sufficient guarantee of frost resistance: *i. e.*, a tough brick will not freeze, no matter what its absorption may be, while a brittle brick, no matter how frost-proof it may be, is undesirable as a paver. This view is not yet accepted by many engineers and some brick manufacturers, and the following investigation has been made in order to throw light upon this highly important point.

II. PLAN OF THE INVESTIGATION.

In order to get at the points involved, it was decided:

1st. To procure a large quantity of bricks from one firm, made from one material and burned by the same man, and representing all grades of vitrification from the softest salmon up to the hardest over-burned and misshapen cull.

2d. To classify these bricks accurately into a number of groups, on the basis of their absorption percentage.

3d. To test each group, represented by two or more rattler charges of equal absorption, for its toughness, by the standard rattler test.

4th. To take one charge of each group, after completing the rattler test, and soak it full of water and then freeze it repeatedly to observe its ability to withstand frost.

5th. To finally compare the frozen and unfrozen charger of each group by a still further rattling of short duration, in order to see whether the frost had weakened them. It was expected in some instances that the bricks would visibly crumble by frost, while previous tests had shown that in other cases no apparent effect would be exerted, though some weakening might naturally be expected to occur.

6th. It was hoped that the results would show whether bricks of sufficient hardness to endure the rattling test with moderate losses would withstand freezing also, or whether power to withstand frost must be considered as a separate factor in a brick of otherwise proved value.

III. THE SELECTION OF THE MATERIALS FOR THE TEST.

The Portsmouth Pressed Brick Company, of Portsmouth, Ohio, through the courtesy and liberality of its President, Mr. H. S. Grimes, not only permitted the selection of the materials for the test from the supplies of bricks on their yard, but also agreed to defray the expense of the investigation up to a certain amount. Though this sum has been considerably exceeded, their contribution still constitutes the larger proportion of the total cost and it is due them to say that but for their ready help and encouragement, the investigation would not have been made at this time. It is a pleasure to make this acknowledgement of their broad-gauged liberality and public spirit.

The bricks were selected by the writer in person, who chipped each brick with a small hammer, observed its color, classified it in a scale of hardness consisting of nine grades as follows:

I. 40 Bricks. Soft Salmon.

The color of this sample was a light yellowish red. The brick was unshrunken, being about the size of the dry brick before burning. Its hardness was very low—could be freely cut with a knife, almost whittled. It was too soft to be used in ordinary building construction, except possibly as a filling material in a thick wall.

Prof. Edward Orton, Jr., Columbus, Ohio.

H. 40 Bricks. Red Building Bricks.

The color was a light red—devoid of the yellow cast of the preceding group. The brick had shrunk materially, about one-half of the final shrinkage of the harder grades. The hardness was still poor—could be cut freely, but not whittled. It was hard enough for ordinary building purposes, but not for paving.

G. 40 Bricks. Soft No. 2 Pavers.

Color was at about its reddest stage—a good brick-red. The shrinkage had progressed to about 75 per cent. of the final amount. The hardness was now beyond cutting, but the brick could still be scratched. It was hard enough for sale as a No. 2 paver, though its use in street work would be a cause of anxiety to its maker.

F. 40 Bricks. Hard No. 2 Pavers.

The color was about the same as G—very little darker. The shrinkage was about the same as G. The fracture was glossy where kiln-checked, but stony on a new break. The hardness was such that only a scratch could be inflicted.

E. 40 Bricks. Soft No. 1 Pavers.

The color was dark red—without any brown as yet. The shrinkage was about up to its maximum. The hardness was also about maximum. Knife could not cut or scratch sample on a smooth surface. Body was dense and grains nearly all amalgamated into a tight matrix.

D. 40 Bricks. Good No. 1 Pavers.

The color was light chocolate brown, with a reddish cast. The fracture was smooth and conchoidal in places. Knife left a metallic streak without cutting. Shrinkage, maximum. A type of fine-appearing paving brick.

C. 40 Bricks. Best No. 1 Pavers.

Color chocolate or liver brown. Fracture smooth, inclining to conchoidal. Shrinkage maximum. Very hard, dense material.

B. 40 Bricks. Overburnt No. 1's.

Color, dark chocolate—no red left in it. Black border, ¼ to ⅛ inches deep around exterior. Size, greater than C, due to minute vesicular structure, indicating beginning of breaking down of the clay into fusion. Fracture smooth, but not so glossy as before, owing to less density.

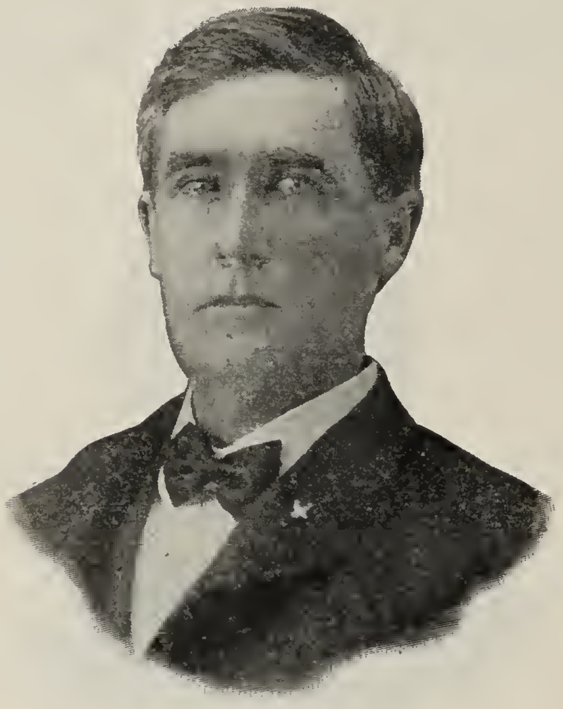
A. 40 Bricks. Overburnt Culls.

Color—greenish-black on exterior—chocolate brown to darker brown in interior—depth of exterior color from ¼ to ¾ inches. Many of the bricks were bent or twisted out of shape. Some were more markedly vesticular than others, but in general, they were not spongy to the unaided eye, except on the outer crust.

These 360 bricks whose selection took nearly a day's careful labor and much sorting and comparison and the rejection of many intermediates, were shipped to Columbus in barrels.

IV. THE ABSORPTION TEST.

As the bricks had been taken from the open air piles, they were naturally in all stages of dampness. They were accordingly placed in a down-draft test kiln, and heated up cautiously in 12 hours to to a temperature where the hand could not be kept in the kiln but a moment—probably 160 to 180° F. In the next 12 hours they were carefully increased up to about 250° F., so that an iron rod introduced into the kiln for a few moments would hiss slightly on wetting. The kiln was then cooled down in 24 hours with doors and wickets shut. This treatment was certainly sufficiently gentle to expel all water without any possible danger of checking, or weakening the bricks, either hard or soft.



C. N. Adams, Alexandria, La.

The thoroughly dried bricks were then weighed on a torsion balance sensitive to one gram. They weighed from 4023 grams as a minimum, to 4767 grams maximum, the average being 4400 grams. A serial number was painted upon each brick with white lead as its weight was taken. The weight and numbered bricks were then immersed in a large tank of water, and left there for 48 hours. At the end of this period they were removed, wiped dry with a towel, and weighed at once. The bricks were carried through in 3 or 4 batches in order that the time of absorption between the first and last weighed in any single batch might not be long enough to make a factor of variation.

When all the bricks had been reweighed, they were once more placed in he kiln and dried as before the absorption test, the work of W. H. Hatt, and others, having shown that it is essential that the rattler test shall be conducted on dry materials only. The drying, weighing, soaking, reweighing, redrying and calculation of results took the entire time of one man for about three weeks, including a number of night shifts spent in firing the kiln for drying purposes.

The results of the absorption test showed a wide range of figures, as was expected. The maximum was 16.11 per cent. on one of the salmon bricks, while the minimum was zero, or an amount not recognizable with certainty on the balance employed whose range of accuracy was nominally 0.022 per cent., but all the speed at which it was necessary to make weighings was probably not accurate for amounts below 0.10 per cent. About 150 of the bricks showed no appreciable absorption, *i. e.*, less than 0.1 per cent.

The classification of the bricks into absorption groups was next undertaken. It was found, as was anticipated, that the absorption data did not wholly agree with the group classification by color and appearance, which had been used in the selection of the material at the factory. The latter had served its purpose in providing a lot of material of graduated absorptions, and the original group boundaries were now no longer needed, in the case of bricks showing appreciable absorption. In the case of the four hardest burned groups, so little absorption was observed that the color grouping was retained for lack of anything better.

The following table shows the groups as arranged by the new grouping:

TABLE I

New Group Designation.	Number of Brick Included.	Average Absorption. Per cent. of Dry Weights.	Maximum Absorption.	Minimum Absorption.	Range Between Maximum and Minimum.
O	9	15.02	16.11	14.27	1.84
N	27	13.44	14.26	12.74	1.52
M	18	11.72	12.72	10.62	2.10
L	18	9.26	10.41	8.37	2.04
K	18	7.06	8.28	6.32	1.96
J	27	5.60	6.30	5.14	1.16
I	27	4.65	5.12	4.22	0.90
H	27	3.70	4.15	3.21	0.94
G	18	2.45	3.19	1.46	1.73
F	18	0.89	1.44	0.48	0.96
E	18	0.27	0.48	0.11	0.37
D	27	0.086	....	....	....
C	27	0.046	....	....	....
B	36	0.080	....	....	....
A	36	0.014	....	....	....

This classification into groups was not wholly saticfortory. It would have been better if about three times as many bricks could have been treated, and then not less than four charges of nine each could have been chosen from each group; also by rejecting intermediates, a series of groups could have been obtained whose adjacent extremes in no case could approach each other too closely.

In this work, for instance in groups G and F, the highest absorption in group F was 1.44, while the lowest of group G was 1.46. The ideal series would have been to have the maximum of each group separated from the minimum of the next group above by 0.5 per cent. absorption, and also to reduce the range of absorption in groups to about 0.5 per cent., while in this work it varied from 1 to 2 per cent. Thus the groups were not as homogenous as was desired, nor separated from each other by intervals as desired. In view of the small number of bricks in some of the groups however, it seemed better to incur these sources of criticism than to test smaller batches of bricks per group.

V. THE RATTLING TEST.

The dried and classified material was now run through the standard rattler test of the National Brick Manufacturers' Association. For those not familiar with this test the following outline is given:

1st. The barrel of the rattler is 28 inches in diameter by 20 inches in length.

2d. It is a 14-sided polygon in cross section, and supported on trunnions on either end, and with no shaft or obstruction in the barrel.

3d. It is built of cast iron heads, and either cast or wrought iron staves six inches wide.

4th. The spaces between staves for the escape of dust are not to exceed ⅜ of an inch in width.

5th. The rate of rotation is thirty per minute, permission being given to fall as low as 28 or as high as 32 without vitiating the test.

6th. The number of revolutions per test are 1,800, requiring one hour at standard speed.

7th. The number of bricks composing the charge shall not exceed 12, nor fall below 9.

8th. For an official test two separate charges must be rattled, and the average loss of the two reported as the official result.

9th. The brick must be absolutely dry when tested.

10th. In addition to the bricks, there shall be included in each charge 225 pounds of 1½ inch cast iron tubes which weigh when new about 0.88 pounds each, and also 75 pounds cast iron shot 2 1-2x2 1-2x4 1-2 inches and weighing when new about 7 pounds each.

11th. The shot of both sizes, wearing away rapidly in the test, must be replaced by new ones whenever they have lost 10 per cent. of their original weight. This requires a frequent inspection of the shot, and rejection of all below the limit of weight, and filling up to the standard with new material. Thus every charge contains cubes and shot in all stages of wear from new to the rejection limit.

The losses found in average paving bricks obtained by this process of testing vary from 12 to 25 per cent. Occasional figures below 10 per cent. have been reported, but they are very rare indeed and perhaps not fully authenticated. Losses up to 35 and 40 per cent. are common on materials submitted for test as paving bricks, but it is believed that such bricks are not used and are merely tested for information as to their possibilities.

There is no standard or limit set by the N. B. M. A., as to what constitutes an acceptable loss per cent. in this test. They rightly leave the question to the engineer who is to use the material, to determine. The figures in use in different localities naturally differ with the climate, the size of the town, the intensity of wear, the size of the loads likely to be hauled, etc. In Columbus, Ohio, the limit set is 18 per cent. loss on abrasion; no other test is employed. In Chicago, I am informed that the limit has been 17 per cent. at one time, and 15 per cent. at another. The latter figure is undoubtedly very severe, and can only be met by a small proportion of manufacturers. In my judgment 17 per cent. for heavy traffic streets and 20 per cent. for light residence streets constitute reasonable limits, which can be met by the makers of the great majority of the brands on the market, if they use proper care in sorting their product.

TABLE II.

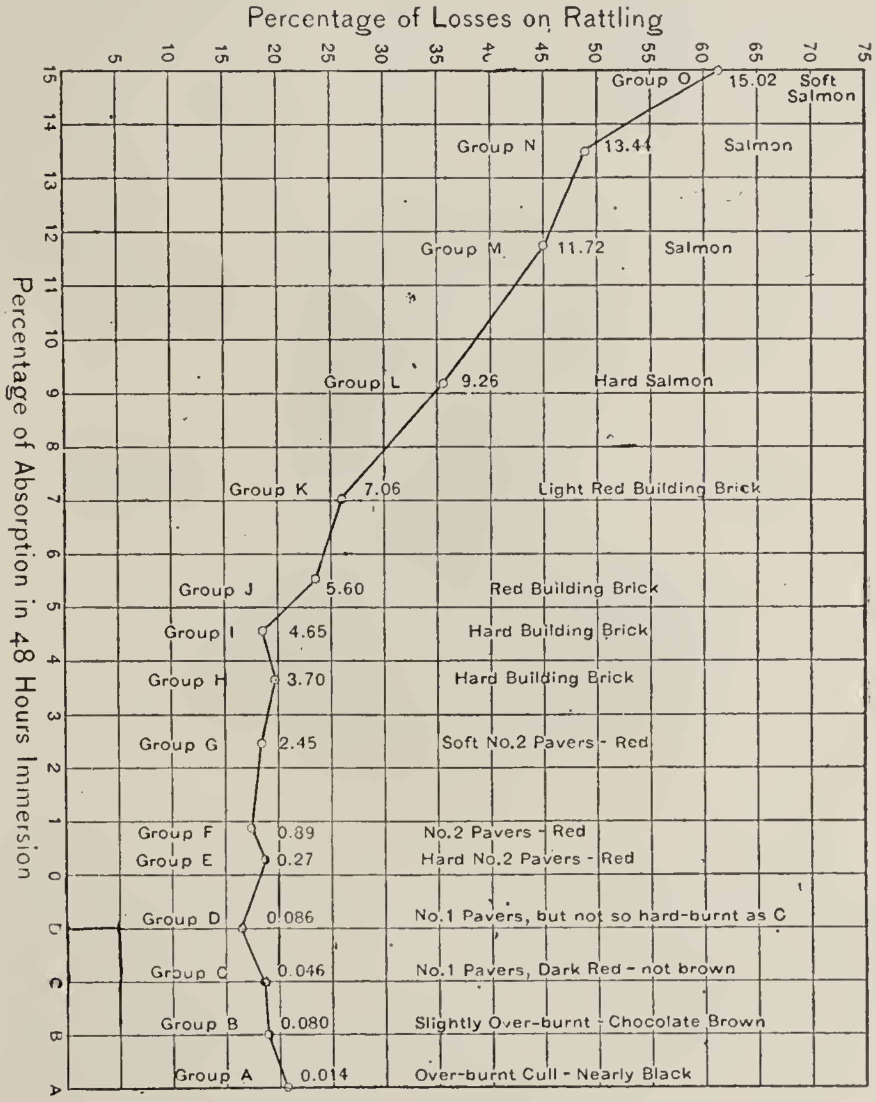
New Group Designation.	Number of Charge.	Loss in Per cents of Initial Weight.	Average Loss.	Average Absorption Per cents. of Dry Weight.	Remarks.
O	1	63.33	63.33	15.02	none broken.
N	1	48.36	48.94	13.44	none broken.
	2	48.35			none broken.
	3	50.11			none broken.
M	1	43.36	44.71	11.72	one broken.
	2	46.06			
L	1	31.52	35.12	9.26	two broken.
	2	38.73			three broken.
K	1	26.88	25.65	7.06	none broken.
	2	24.42			three broken.
J	1	23.74	23.09	5.60	none broken.
	2	22.56			one broken.
	3	22.99			one broken in 2 pieces.
I	1	18.02	18.42	4.65	none broken.
	2	19.55			one broken.
	3	17.71			none broken.
H	1	18.74	19.27	3.70	one broken.
	2	18.81			two broken, one in four pieces
	3	20.22			none broken.
G	1	17.45	17.71	2.45	none broken.
	2	17.97			none broken.
F	1	17.88	16.73	0.89	one broken.
	2	15.58			none broken.
E	1	17.22	17.88	0.27	one broken in several pieces.
	2	18.54			one broken.
D	1	15.46	15.75	0.086	none broken.
	2	15.41			none broken.
	3	16.39			none broken.
C	1	16.42	17.60	0.046	one broken.
	2	16.38			one broken in halves.
	3	18.00			none broken.
B	1	18.70	18.07	0.080	two broken badly.
	2	17.58			four broken badly.
	3	17.87			one broken. badly.
	4	18.15			one broken badly.
A	1	19.59	19.51	0.014	four broken badly, one in three pieces.
	2	21.46			two broken badly, one in small pieces.
	3	19.09			one broken.
	4	17.91			none broken.

In this investigation the standard requirements were strictly observed, except that the shot were allowed to fall 15 per cent. below their initial weight before rejection instead of 10 per cent.; their collective weight was carefully maintained at 300 pounds at all times. The charges were overhauled and rejections made every five rattlings. It is believed that this procedure accomplished in all respects the same results as where the strict letter of the law was observed.

In the following table the results of the rattler test are shown, together with the absorption data:

The data shown above demonstrates a number of interesting things. Chief among these is the fact that the losses in rattling reach their minimum at what were selected as the softer NO. 1 bricks, and rises regularly, though not rapidly, with every increase in hardness. Another significant point is that from Group I, whose absorption averages 4.65 per cent. and whose maximum was over 5 per cent. down to charge A, which was notably over-burned and chemically "reduced," the losses hover very closely around 17.88 per cent., which is the average for these nine groups. The fluctuation from this average is 0.54, 1.39, 0.17, 1.15, 0, 2.03, 0.28, 0.19, and 1.53 or 0.82 per cent. average. Moreover, the fluctuations above and below without marked sequence, though there is a gradual descent to group D and a gradual ascent from it towards group A.

In order to bring out more clearly the relationships between these various quantities and properties, the following curve sheet has been prepared:



It will be observed that in the charges from I to F inclusive, which the manufacturer grades as seconds, the number of brick broken in the test was 7 out of 108 rattled, or 6.5 per cent. While in the two groups C and D, which he grades as No. 1 hard and No. 1 soft, respectively, the broken bricks were 2 in 54, or 3.4 per cent. In the two hard groups A and B there were 15 brick broken out of 72 or 20.8 per cent. This shows most powerfully the weakening action of overfiring, which has reduced the element of strength without so rapidly affecting the element of hardness. The result is that the losses on abrasion are increasing slowly, while the proportion of breaks is increasing very rapidly indeed.

The rapid increase of losses by rattling with the increase in absorption above to 5 per cent. is most beautifully shown. It proves very clearly that for this clay, under this system of manufacture, and burned in this method, that substantially the full strength will be attained at a point far above that used by the manufacturer in grading his product. The question now hinges on whether this product comprised in groups I to E inclusive is frost-proof in the popular meaning of that term. If they are, then the manufacturer is entitled to include them in his first-class output, and the engineer should gladly accept them, as they have a factor of safety from breakage over three times as great as the hard burned material, which is usually leniently inspected, and at the same time, a less rate of loss from ordinary wear.

V. THE FREEZING TEST.

In order to settle this highly interesting point, the charges from the rattler test, which had been carefully marked, were inspected and one charge from groups M, L, K, J, I, H, F and E was selected for freezing. The freezing test was limited to this number of charges, because of the time required to do the work, and because the question practically at issue did not require the extremely soft or the extremely hard bricks to be tested. The location of the limits of safe absorption between these extremes was the point to be settled, and the charges selected for test seemed to cover that range. In order to make the comparisons as fair as possible, bricks which had been broken in the rattler were ruled out, and the comparison made on rattled whole brick only.

TABLE III.

CHARGES SELECTED FOR FINAL COMPARISON.

Frozen			Not Frozen		
Group.	Number Bricks.	Weight.	Group.	Number Bricks.	Weight.
M—2	9 bricks	47.5	M—1	9 bricks	49.5
L—1.......	6 bricks	40.9	L—2	6 bricks	40.1
K—2	6 bricks	43.0	K—1	6 bricks	43.5
J—1	8 bricks	58.0	J—2	8 bricks	59.6
I—1	9 bricks	71.0	I—3	9 bricks	70.4
H—3	9 bricks	70 6	H—1....	9 bricks	70.6
G—1	9 bricks	71 8	G—2	9 bricks	71.5
F—1.......	8 bricks	63 8	F—2	8 bricks	64.8
E—1	8 bricks	64 6	E—2	8 bricks	64.7

The charges to be frozen were next soaked for 48 hours preparatory to freezing; they were then weighed, and their absorption percentages recalculated. The soaking this time having been done after the bricks were much worn and their surface opened up to the attack of water, naturally took a larger proportion than at the previous determination. The figures are as follows:

TABLE IV.

Group Designation.	Charge Number.	Original Absorption of Group.	Absorption After Rattling.
M..............	2	11.72	12.84
L	1	9.26	10.19
K..............	2	7.06	8.21
J	1	5.60	6.28
I	1	4.65	5.07
H..............	3	3.70	4.10
G	1	2.45	3.20
F	1	0.89	1.41
E	1	0.27	0.77

The charges were then placed in freezing boxes of iron, 12 x 22 x 18 feet deep, the lids bolted down water tight and submerged in the brine tanks of the Indianola Ice Company. The writer desires to acknowledge his indebtedness to Mr. W. F. Polley, Manager, for favors extended in this connection.

The temperature varied from 13 to 17 degrees Fahrenheit. The bricks substantially filled the boxes, but were not allowed to touch the bottom or sides, and were separated from each other by pieces of lath. They were kept submerged for 22 hours. They were then taken out, opened, the box filled with hot water, and the bricks thawed for 1 hour, or until warm through and through. They were then shut up and refrozen, this treatment being repeated five times consecutively, each treatment consuming one day. The bricks were generally covered with frost when the box was opened, *or became covered after standing a few minutes in the open air,* showing that they were cold enough to freeze the moisture condensed from the atmosphere. A bottle of water placed in the box between the bricks was frozen solid when removed, though separated from contact with the sides of the box with 6 inches of air insulation.

In no case did the bricks visibly or decidedly fail in the freezing. The soft groups M and L gave off a little granular brick dust on handling, but did not chip or flake. The harder groups were absolutely unaffected, so far as could be seen. There is no question but that what water they contained was frozen each time.

The results of this part of the test were not wholly a surprise, as great difficulty had been experienced in former work, in damaging clay products of even higher absorption by freezing. Records have been published of tests on products holding 20 per cent. water withstanding repeated freezing without damage.

On the other hand, every engineer knows that soft burned bricks are unreliable and often go down by frost; many of them with smaller amounts of absorption than those included in this test. This brings in other factors which can only be explained in part at this time.

1st. Different clays respond to freezing with very different behavior. Some stand very little, and others very much.

2d. The process of manufacture makes a very great difference in the structure of the product and the resultant physical strength and resisting power to frost and abrasion. In general soft mud bricks stand frost best, stiff mud next, and dry pressed least.

3d. The shape of the ware and the suddenness of the application are also very influential. Sudden heavy freezing applied on all sides at once is most powerful for disruption, and slow freezing from one side only is least destructive.

Whatever may be the facts on this general question of an effective freezing test for clay wares, the fact remains that in this instance, while thorough freezing was accomplished five times consecutively, it produced no visible effect on the wares.

However, it is unsafe to conclude that no damage has been done because none is visible. Accordingly, the frozen charges were taken to the laboratory and once more dried out in the kiln, using 24 hours for this purpose, and cooling 24 hours longer. The dried charges were now ready for re-rattling.

The periods of rattling were very short, because it was desired to see whether the surface wore away faster in the frozen bricks than in the unfrozen ones. If the body were weaker superficially, but not affected to any depth by the frost action, then the first few moments of wear would show a difference between the losses of the frozen and unfrozen charges. If the body were unaffected by the freezing, then the two charges ought to show a very closely comparable loss, because each set of bricks had been reduced by the original rattling test to rounded masses, shorn of their corners and edges. The study of great numbers of rattler curves, where the losses have been measured at every ten minutes, and plotted, have shown that during the early portion of a rattling test the accidental feature is very high, and large losses by the breaking off of big pieces are frequent. As the test progresses, the masses tend to take the form of spheres, and then the losses by spalling becomes less and less, and the steady *wearing* loss becomes nearly uniform for any given material.

From this it was expected that these rounded bricks would give closely agreeing losses in each duplicate charge, unless the frost factor were to introduce a new cause of variation.

The rattlings were made in three seperate periods, two of three minutes each, and one of four minutes, or ten minutes in all. The greatest care was used to see that the work was strictly comparable throughout.

TABLE V.

Group Designation.	Charge No.	Treatment.	Rattler Losses.			Absorption After Rattling.
			3 Min.	6 Min.	10 Min.	
M	2	frozen	2.29	4.58	7.79	12.84
	1	unfrozen	2.27	4.54	7.73	
L	1	frozen	1.22	2.93	4.39	10.19
	2	unfrozen	1.49	2.98	4.72	
K	2	frozen	1.16	2.20	3.47	8.21
	1	unfrozen	0.92	2.06	3.45	
J.......	1	frozen	0.68	1.02	2.06	6.28
	2	unfrozen	0.50	0.83	1.85	
I	1	frozen	0.42	1.12	1.68	5.07
	3	unfrozen	0.56	1.13	2.12	
H	3	frozen	0.14	0.70	1.27	4 10
	1	unfrozen	0.56	1.13	1.98	
G	1	frozen	0.27	0.69	1.25	3.20
	2	unfrozen	0.27	0.83	1.25	
F	1	frozen	0.47	0.94	1.41	1.41
	2	unfrozen	0.30	0.61	1.39	
E	1	frozen	0.61	0.92	2.01	0.77
	2	unfrozen	0.46	0.77	1.39	

It must be understood that the above rattling tests are only comparable with each other, group by group, and not group with group. As the charges consisted only of the whole bricks left from the previous rattling of each charge, and therefore varied from 6 to 9 bricks per charge, it will be impossible to accurately connect the performances of each charge with its rate of loss before freezing. It is only possible to compare it with another charge of the same absorption, same number of bricks and worn to about the same degree by an identical treatment, except as to freezing.

A scrutiny of the results shown in Table V develops the following points:

1st. After three minutes' rattling, which should be especially destructive to bricks whose surface had been weakened by repeated freezing, the nine charges stood as follows:

Cases where frozen losses exceeded unfrozen........4—K, J, F, E.
Cases where losses were about equal......................2—M, G.
Cases where unfrozen losses exceeded frozen..........3—L, I, H.

The four frozen samples which lost more heavily than their unfrozen companion charges, varied from 8.21 per cent. absorption to

0.77 per cent. The three cases where frozen charges stood more than the unfrozen, had absorptions of 10.19, 5.07 and 4.10 respectively. The charges of equal loss had absorptions of 12.84 and 3.20. In no case did the loss of one charge exceed that of its companion charge by a large amount, or one beyond the usual limit of flucuation of unfrozen charges.

Nothing can be shown from this data, except that the freezing has not affected the softer bricks more than it has the harder ones.

2d. After six minutes' rattling, during which the loose material, if any existed, should have been pretty well worn off from the exterior of the frozen brick, the records show:

Cases where frozen brick exceed unfrozen..........4—K, J, F, E.
Cases where losses are about equal........................3—M, L, I.

Cases where unfrozen losses are highest................2—H. G.

It will be noted that there was a shifting around of positions during this test, G dropping down to the heavier losses, while L and I become equal.

3d. After ten minutes' rattling, beyond which it was thought not worth while to go, the charges stood as follows:

Cases where frozen losses exceeded unfrozen..............2—J, E.
Cases where losses are about equal............4—M. K, G, F.
Cases where unfrozen losses exceed frozen............3—L, I, H.

A still further shifting has here occurred, indicating the tendency of the charges to become more nearly uniform in rate of wear.

These facts seem to show that in this instance and under these conditions that the freezing treatment given was insufficient to produce any clearly marked effect. The charges which lost most were not grouped systematically towards either high or low absorption—in fact, their erratic distribution all over the range forces one to believe that the inherent irregularities of the material were more influential than the effect of frost, and that the variation observed resulted from this inherent irregularity and do not indicate anything else.

This frost treatment is unsatisfactory to the writer because its results do not correspond with the general observation that soft burned clay wares do deteriorate on freezing. It was expected that charges M, L and probably K would show marked deterioration, but it was also confidently expected that charges I, H, G, etc., would not. The results were somewhat disappointing in that no clear cut distinction can be drawn between the hard and soft end of the series.

There remains two courses to pursue: 1st. To devise a much more sudden and heavy freezing test, by which bricks previously soaked full of water can be rapidly reduced to a point well below freezing. 2d. To expose the material to nature's alternations of freezing and thawing. In the case of this investigation the latter course is available, and the charges will half of them be exposed next winter, and in the spring be re-rattled in comparison with the protected charges, to see if any further clue can be gotten. This method, unfortunately, is too slow for a laboratory process and gives no relief in the matter of using the freezing test for determining practical questions when they arrive.

SUMMARY.

This investigation, in the opinion of the writer, shows the following points:

1st. That this clay, under the manufacturing treatment given by this company, reaches its maturity as regards toughness and ability to resist impact and abrasion, at an absorption of about 5 per cent.

2d. That at this stage, its color is still light red, and its fracture far from vitreous, and it would be condemned by most engineers and most paving brick manufacturers as "*too soft*."

3d. That no important or consistent gains in strength or toughness are found on burning the material harder, though the dark red, and chocolate-colored stages, where the absorption falls below 1 per cent.; but neither is there any marked falling off. The gains in density and hardness offset the losses by increased brittleness, so that rattling losses remain about uniform during this period.

4th. Burning beyond the chocolate-colored stage is invariably a source of deterioration. The hardness and density reach their maximum, while the clay is still dark red. Brittleness continues to increase, and with it a vesicular structure begins to appear, so that the brick fails both by breaking, chipping and wearing. The percentage losses on rattling do not increase as rapidly from overburning as from under-firing, but the percentage of broken bricks increases very much more rapidly, and they are a very serious cause of street failures.

5th. The weather resisting power of those bricks *which have reached their strength maturity, while still of relatively high absorption*, has not yet been conclusively proven. Five consecutive heavy freezings and thawings failed to weaken their structure. Whether a still larger number of repetitions would do so is not yet known. The test would be accepted with much more confidence if other still softer samples, which have not reached their strength maturity, had been damaged by these same freezing tests. Such was not the case, however, and this must mean, either that these freezing tests were inadequate, or that the material becomes frost-proof a long time before it reaches its best strength, and at a much greater absorption percentage than has been considered possible hitherto.

As a whole, in the opinion of the writer, the value of the rattler test as a means of judging the value of paving materials has been clearly proven, and the contention that bricks which will endure the standard rattler test creditably will also endure the effect of frost creditably has been materially strenghened, but not yet conclusively proven.

In conclusion, the writer desires to give public thanks to Mr. Lester Ogden, who has carried out the large amount of work in this investigation with the greatest fidelity and attention to detail.

The results thus far obtained on the present year's test in the work done for the N. B. M. A. differs from the preceding in the following points:

1st. The size of the sample was about 1300 bricks instead of 360.

2d. In classifying them out into groups according to their absorption content, it was possible to collect a large number of samples in which the absorption content was very closely alike. The groups in the A. S. T. M. test were faulty in having too wide absorption range between various numbers of the groups, while in the N. B. M. A. only a difference of a few hundredths of a per cent. in absorption exists between the maximum and the minimum of each group. This made the comparison far more reliable, and also enabled the groups to be spaced at regular intervals.

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3rd. The number of charges per group could be made as large as desired; in many cases, six charges were rattled, all having the same absorption content.

4th. The general results between the absorption curve and abrasion curve obtained in this year's work checked those of the former work, and shows that the abrasion loss after reaching twenty per cent. does not fall much lower, no matter how hard the brick may be burned, while the absorption percentages continue dropping down to practically nothing with the harder charges. This again proves, on an entirely different material, that the strength shown by brick in the rattler does not materially increase after a certain hardness is reached, and shows that this hardness is reached at a far higher absorption than was formerly considered the case. (Applause.)

Professor Orton then explained the freezing test made on the A. S. T. M. report and showed that they were inadequate and that they had failed to prove the most important point in the investigation, viz., at what water absorption percentages the brick become immune to frost. He then explained what was being done to remedy this trouble in the current year's work. He showed that the brick in question were being soaked every day in water at about fifty degrees temperature and frozen over night when the temperature fell below the freezing point. The charges being in crates which could be lifted out of the water and exposed to the open air and to the effect of the wind as well as the temperature. The results of this freezing could not yet be officially stated as the work was still in progress, but 20 or more freezings had been successfully carried out and the softer bricks were showing the effect of them very noticeably, some of them being so much effected that they could hardly be kept in the crates. Everything points to the frost test in this experiment being sufficiently severe to bring out with the vital point of the whole investigation.

The results of the work will be printed in the form of a bulletin and sent to all the members of the N. B. M. A. and spread broadcast among the users of the paving material as well as the manufacturers. It is hoped that the results will be available for printing by the end of the current school year.

General Discussion.

Mr. Blair: I would like to ask the Professor a number of questions. I have been greatly interested in this whole investigation. It is certainly along lines that will be very valuable to us. I want to know if it is not possible to go one step further after you have pursued the investigation now on hand. Take for instance that charge of 20, and cut them into charges of ten each. You rattle that series all the way through, from beginning to end, in the ordinary way. As these have been rattled, take out the corresponding one-half of the charge and freeze them, and while frozen, rattle them to see how the losses, etc., correspond, and give us a comparative study along the lines in contemplation with the finished investigation.

A. R. Root, Philadelphia, Pa.

Prof. Orton: It would be possible to do that, but I do not see what you would gain. We all know that a brick full of frozen water will stand very much more in a rattler than if thawed. We tried that and submitted at the Pittsburg convention a series of tests on that point, and it was also brought out by a research from a brickmaker of Canada—Mr. Tester, I think it was, that a paving brick when full of water and frozen will stand a better test than if thawed.

Mr. Blair: The idea in my mind is this: In my observations and study of this question and conditions have been confined to the streets. I am aware of the technical investigation that has been made, and as it stands, it seems to prove that a soft brick frozen does not wear so rapidly in the rattler, as the soft brick not frozen. That is the result of investigation. But whatever comes off of a frozen brick in the rattler comes off in a very few revolutions and then stops. Now, there is a reason for that that I will not go into. I have observed this in the streets. That a soft brick when frozen will wear off. You take them following a rain, and there is a freeze immediately following the rain, and if you will get down with a spy glass or a microscope, or a large magnifying glass and examine the conditions, especially if there is snow where it is easily observed, you will find little fine particles of brick that have been thrown off of the brick. It throws off about so much of the brick and then immediately stops, and don't seem to go any farther. There seems to be a tough crust formed by the ice that so stops disintegration, but every time the condition in the weather changes, it takes so much off that brick, and in the course of the year or a winter or so, it shows that that soft brick shows very great wear, comparatively speaking. That is the point I am anxious to have brought out.

Mr. Christopher: I would like to ask the Professor a question. What in your opinion would be the best percentage of absorption?

Prof. Orton: The best percentage of absorption is, I think, a matter which is to be determined for each and every brick. There is no single best percentage of absorption.

Mr. Christopher: What I want to bring out is this: In drawing specifications, you cannot specify an absorption for each and every brick. There must be an absorption allowance in your specifications, and you want that so it will bring out the best brick that you can get for your pavement. Now there are some people who like a high per cent.; others like a low per cent. There are some clays that will absorb more than others. We have made some experiments, and I find there are certain clays that will not absorb much, and I believe the brick men can get to work and follow along these lines, and being posted on results, be able to get the best brick possible.

Prof. Orton: The very point I am trying to bring out is that the absorption test ought not be specified or considered at all, and that the rattler test is the proper test, for it is proven. This test here shows a rattler strength of 20 per cent., and we know by positive experiment that we cannot do that brick any harm by freezing it, and we can go on 2 or 3 per cent. higher and still not do any harm by freezing it, and I contend that the rattler test is sufficient, that the absorption test does not tell us anything.

Mr. Christopher: Your argument does not prove it. I know brick showing an absorption of 25 of 1 per cent. not paving brick and which show the best results in the rattler test. On the other hand, I know brick showing 5 per cent. and are paving brick, and do not get good results in the rattler.

Prof. Orton: You say brick showing 5 per cent. will not stand up in the rattler. I say make the rattler test the whole test.

Mr. Ittner: I supposed that the absorption test for vitrified street paving brick had been abandoned some four or five years ago. I was glad to hear that it had been abandoned, and I was surprised to hear from this discussion that it is still considered a feature in street paving brick. My own judgment, based of what I have observed in the streets of St. Louis and other cities as I have passed over them, was that no brick in any street in any city is damaged by frost. The sooner this absorption test is abandoned in connection with vitrified paving brick, the better. No brick that will stand a rattler tost and pass muster will be damaged by frost or absorption.

Mr. Mayer: Were the brick that went into the rattler thoroughly dry or wet? Since there is always more or less moisture in the streets, consequently there would be a difference.

Prof. Orton: The brick were all artificially dried.

George J. Markley, Mineral City: I would like to ask the Professor if this water test for removing the frost is as good as the air test? Whether there would not be a difference between the two tests, taking the frost from the brick after being frozen, by air, or taking it out by water.

Prof. Orton: I do not think there would be any difference for the reason that damage is not done by the thawing, but by the freezing. The method of thawing is indifferent. It is the actual expansion that the water undergoes by freezing. It does not matter at all whether you thaw quickly or slowly, or thaw in air, or steam or water.

Mr. Guise: This is a matter of knowledge of material. You cannot be governed by the absorption test, and I do not think the rattler test is a fair test. The test on the street is the only fair test, and has been proved in Washington and Baltimore. I have talked with the Commissioner of Streets of District of Columbia, and Engineer Leeth, of Washington, and suggested to them that they lay a section of a street containing the different makes of brick, paving brick, and get at the wearing qualities of the paving brick which he had down. It was done in Washington and also in Baltimore at my suggestion, and the brick that stood the highest rattler test stood the poorest test on the street. The rattler test is not a fair test, in my opinion.

Mr. Ittner: Some years ago, I presume it was as far back as twenty years, in the city of St. Louis. The Water Commissioner at the water-works laid section of sample brick on the lines suggested and had trucks loaded with stone amounting to ten or fifteen tons hauled back and forth over the brick. This is the method that was adopted there, and I have just related this in response to what Mr. Guise has said, and not because I do not think the rattler test is the true test. This method was adopted not only with paving brick, but with stone and granite. But this has been abandoned in the city of St. Louis and they are now using the rattler test.

Mr. Grimes: I would like to ask Professor Orton if the investigations so far, demonstrated to him that 20 per cent. rattler test will be the probable result in the present test which is used. Another point I wanted to draw out, there has been a supposition that the National Brick Manufacturers' Association have adopted per cent. of loss in the rattler test. Now, as a matter of fact, this is not the case. They simply adopted rules to make the rattler test, and that impression is abroad and it is erroneous. I believe the investigations of the Professor will allow in his recommendation for a certain percentage of the rattler test. I am asking the question whether so far as his investigations have lead up to, whether or not he wants to make that statement.

Prof. Orton: I do not feel ready yet to make a statement, Mr. Grimes. I thought there was a good deal of meat in what Mr. Christopher said, that the three classifications is the proper thing. There is no reason to doubt but that the conditions of wear in streets of large cities are much more severe than in small towns, and I think it is eminently proper that a city should pay for and use the very highest grade of material they can get, but I do not think it right that the smaller communities should have to use the same standard. In regard to the Association setting a standard. They never did set a standard. They adopted a method of making a test and then left it rightfully with the city engineers to say how much loss they will permit in their locality, and different towns adapt different ideas. In Columbus we have 17. I understand from Mr. Christopher that they have a more severe test than we do in Columbus, and I am sure that 20 per cent. would do well in most cases, but I do not want to say it will do in all places.

Mr. Christopher: I am now working on a set of specifications for the city of Chicago. I requested that I be given time until after this convention, and I would very much like to meet the paving brick men so we can thresh the thing out rather than to fight them latter on. If we can meet some afternoon or evening and reach a satisfactory conclusion, it would be well to do so. I would like to get their ideas, and if they will set a time I will be willing.

Mr. Blair: It will afford us pleasure to meet Mr. Christopher, and that will take out of the convention discussion that is not interesting to the general membership.

Vice-President Gregory: If there is nothing further on this subject, we will pass on to the next.

Secretary Randall: I wish to suggest that we skip numbers 6 and 7 for the time being and take up the questions for general discussions, as they relate to the paving problem.

Vice-President Gregory: If there is no objection we will now consider question No. 8. "In the Laying of Brick Pavements, What is the Most Approved Manner of Putting in the Expansion Joint?"

Expansion Joints for Brick Pavements.

Mr. W. P. Blair: Mr. President, I take it upon myself to state that in putting in expansion joints there is just one thing that is absolutely necessary, and that is to put the board in before the rolling or before the filling in of the cement filler. We take it for granted that it will be put in before. That board must be drawn and the expansion cushion put in within 36 hours after the street is finished, if you do not, you cannot draw the board and the street will be ruined.

Jacob Klein, Baltimore, Md.

Mr. Christopher: Across the street?

Mr. Blair: I am speaking of the expansion joint next to the curb.

Vice-President Gregory: The next question fits in with this one, and it might be well to consider it also. "Is it necessary to provide for an expansion joint across the pavement as well as at the sides? If so, at what distance apart, and what is the best material?"

Mr. Blair: In answer to that question, it is one of the mooted questions that is under investigation by professors of engineering of the University of Illinois, and I think it would be wasted time to take up the time of this convention in discussing it. We hope to have it definitely settled within the year.

Mr. Christopher: I wish to say in regard to the expansion joint across the street. From experiment and work that has been done, I find to get the best results, where you have tar, that the expansion joint should be every 50 feet. Leave in the board, it helps to keep the tar from running, and the lumber will work directly opposite your brick. For instance, in wet weather, the wood or lathe would naturally swell, and vice versa. On the expansion joint running parallel with the street, where you have a street railway track, by all means make your expansion from the rail out, not against the rail. If you have the brick where there is any vibration, it is useless for the brick men to advocate putting in a cement filler, for it will never take. The set bond will be broken and your competitors will have it for a horrible example.

Secretary Randall: The next is Question Number 10, "What test would be the best on work used for tunnel work, such as the one being constructed in New York City for the Pennsylvania R. R. Company?"

Mr. Grimes: Mr. Boscarron, perhaps as well known an engineer as there was in the United States, answered that question by saying that he wanted to use a vitrified brick that did not absorb one-tenth of one per cent. of moisture, for the purpose of putting the tunnel under the Ohio River for the Cincinnati Water-Works. He did not make his specifications so that it read a certain per cent. but he got a brick that tested one-tenth of one per cent. and he adopted those brick, a wedge shaped brick for his tunnel. I am merely stating what Mr. Boscarron required in the construction of the tunnel underneath the Ohio River between Cincinnati and Kentucky.

Thos. H. Simms, Birmingham, Ala.

Mr. Hervey Haigh, Catskill, N. Y.: He did not use the rattler test at all?

Mr. Grimes: No, just the absorption test. They were laid in cement for the purpose of preventing the water from getting in.

Vice-President Gregory: This question was interesting to me, and you will excuse me for speaking about it. There were twenty-nine different makes of paving brick tested for this Pennsylvania tunnel, and but two passed the test. One was manufactured in New York City, and I am glad to say that we manufacture the other one. We were unable to get the percentage. They would not give us the results. Perhaps Mr. Haigh got more information than I did, but it was a very severe test made by the engineers of the Pennsylvania Railroad Company, and our brick, as I have said was one of the two that passed the requirement.

Mr. Haigh: I will say for Mr. Gregory's benefit that his firm and one other are the only firms that have produced a brick yet that satisfied the engineer in New York City, but the test is mainly on the rattler test, and it seemed to me that was a little out of the way.

Mr. Blair: And you say the engineer would not publicly announce his test?

Mr. Haigh: I do not want to say that. However, Mr. Gregory's brick, and one other make are the only ones that stood the test.

Mr. Grimes: In your opinion, do you think the rattler test is not the proper test?

Mr. Haigh: It is not the proper test for brick for that purpose.

Secretary Randall: The next is Question Number 11. "In the manufacture of speckled brick by the dry press process, where is the best place to mix the manganese in the dry pan or with the clay after it is screened."

Mr. John B. Millar, Toronto, Ontario: I am particularly interested in this question and would like very much to hear it discussed.

Prof. Orton: I can tell you what is being done at two plants with which I am familiar, two Ohio plants both pressed for sales. They introduce the manganese in the crusher before the clay goes to the dry pan. They put it in the very beginning as soon as they start on the clay in order to have the benefit of the subsequent mixing. One plant does that, the other puts it in the dry pan, the idea seems to be to get it in early in order to give good distribution..

Mr. Koch: In the manufacture of speckled brick by the dry press process, the proper time for admixture of manganess is dependent to a large extent upon the conditon of the clay. The main point however, being to produce as intimate a mixture as possible. At different places various times are usually adopted for mixture of manganese and clay. At one point where your humble servant was employed, a dry fire clay was used which was pressed in hydraulic brick presses giving the highest utilized pressure. To one wheelbarrow of clay, (say about 200 pounds) a predetermined quantity of manganese was added, the rough mixture passed through a disintegrator, over a screen and to the press.

At another place, the fire clay coming direct from the mines is first weighed, then a certain percentage of manganese is added, the whole mass passed through a dry pan then through a steamer to a storage bin. After maturing it is brought to a disintegrator thoroughly mixed thereby, and from there to the press.

At another place the clay is ground, screened, steamed and put into bins. From there the ripe clay is thoroughly mixed with manganese and put into the press. These speckled brick so made are practically on a par as far as the speckled part is concerned, and meet apparently with equal favor on the market.

As stated before, the results are largely dependent upon intimate mixture of manganese and the clay and care should be taken that the clay used is not too damp so as to make the manganese stick in blotches. Outside of that, it does not make any difference whether the manganese is mixed in the dry pan or with the clay after it is screened.

Secretary Randall: The next Number 12, "Does the use of waste heat from cooling kilns tend to effect the color of brick?" This should have come up at the time Mr. Clippert's paper was read, but I have an answer to this from an absent member, which I will read.

Mr. Koch: In regard to this question would state that as far as my experience goes, under most conditions waste heat from a cooling kiln does not do any harm to a kiln drying off as regards the color. Our experience in utilizing this heat in drying red, buff, brown, grey and speckled brick was always good. Our concern found it both economical and practical, in that we saved one cord of wood for 10,000 brick, made better time and had better results. We had a very tender red clay, on which we dared not raise the heat in down-draft kilns above 212 degrees Fahr. until the ware was dry. But with waste heat drying we can raise without any detriment to the brick, a water smoking temperature of 800 degrees Fahr. on top in the same length of time.

Care must be taken that the heat used in water smoking is raised periodically to such an extent that the ware will not check by too fast raising of heat.

Particular attention must be paid to the various heights of the ware as the heat passes down and it is advisable to save out a number of peep hole spaces to put in a metal test rod or thermometer to determine how fast the heat is traveling down. An essential feature is to have draft velocity enough to prevent the moisture removed in the upper part of the kiln from precipitating in the lower part of the kiln, otherwise it will cause checking and whitewasing.

It appears to me that if the scheme of utilizing waste heat from cooling kilns is handled intelligently the results will be simply perfection in all directions.

Vice-President Gregory: The president has prepared the list of names for the Committee on resolutions, and I am asked to announce same.

The Committee on Resolutions.

H. S. Grimes, Portsmouth, Ohio.
E. C. Miller, Fort Wayne, Indiana.
S. C. Guignard, Columbia, S. C.
F. Talbot, St. Louis, Mo.
L. E. Rodgers, Chicago, Ill.
E. A. Wickham, Council Bluffs, Iowa.
J. P. Cahoon, Salt Lake City, Utah.

Vice President Gregory: A motion to adjourn is now in order.

On motion of W. P. Blair, convention adjourned until Friday morning.

THIRD SESSION.

Friday Morning, February 9, 1906.

President Copeland: Gentlemen, you will please come to order, and I will ask the Secretary to announce the first on the morning program.

Secretary Randall: We did not quite finish yesterday's program, so taking up where we left off, the first in order is a paper by Mr. F. W. Fitzpatrick, Washington, D. C., on "Brick, the Universal Building Material." Mr. Fitzpatrick writes that he regrets exceedingly that he can not be present and present his paper in person. It was my intention to have the paper illustrated by sterroptican views of fire-proof buildings but our plans miscarried, the lantern slides which were forwarded by express have not been received and we will have to content ourselves with the paper and the photographs which Mr. Fitzpatrick submits.

BURNT CLAY AS THE UNIVERSAL BUILDING MATERIAL.

By F. W. Fitzpatrick.

Consulting Architect and Secretary of the International Society of Building Commissioners and Inspectors.

Mr. President and Gentlemen: From time immemorial has gold been the standard of value, the basis of monetary system, the most precious and esteemed of metals in ordinary use in all civilized nations; so has burnt clay generally represented the highest standard, the perfection of the craftsman's art of builiding, and so is it generally accepted as the most indubitable, authentic and best preserved record of the history of past times. True, patriots—misguided or otherwise—have tampered with this standard, too, have sought to put baser materials on a par with it, have endeavored to write history on stone and marble, and, even for long periods, have they succeeded in placing the art of clay modeling and baking in the limbo of oblivion; but, phoenix-like—to use a much hackneyed term—it has always risen, not from its ashes, because you cannot reduce it to ashes, but from the "slough of despond" as it were, in a glorious renaissance, to its own high natural and legitimate estate.

We find sun-baked bricks in Egypt, Assyria and the older towns of India that must be at least 3,000 years old. And year by year new excavations reveal to us that brickmaking was known long 'ere that period. In the ruins of Babylonia we find kiln baked brick of most excellent make and shape, even enameled and ornamented. Rome built much of brick and introduced the art into England. Flemish workmen continued the work begun there by the Romans, but we find no record of brick being made by the proverbially slow but sure Englishman prior to 1260. Naturally brickmaking reached its perfection in lands where stone was uncommon.

As naturally, in far remote times, where it was at all procurable, timber was mostly used in building the rude shelters of men; then stone was roughly shaped and made to do duty, there where great permanency was desired, for the parts that had formerly been of wood, and there, for instance, we have the origin of the column and the lintel. In places where stone was difficult to secure, and possibly timber, too, brickmaking was resorted to, at first as a mere substitute for stone and later as a preferable medium of expression and construction. It was found that the parts, the units being small, were easily handled and constituted a building material far more adaptable to the necessities, the varying purposes, particularly of peoples peaceful in their ways and not blessed or cursed with slave labor. Ornamenting the surfaces, enameling in beautiful colors, were natural steps in the development of the art that was brought to very high perfecion in Assyria and Persia.

The Christians borrowed that art and applied it with success in their new capital in Byzantium, where, under the Emperor Bazil, it reached its very apogee. Later still, the followers of Mahomet, at first, rude barbarians and despoilers of everything artistic, little by little fell under the sway of oriental art and began to use burnt clay in all its varied forms themselves. With Persian artists in their midst Constantinople their headquarters, India, their store-house, and fresh art treasures and libraries and masters falling into their hands every day, they could not long withstand the pressure. From brutal barbarity they became protectors, defenders, patrons, nay, very masters of the arts and sciences! Persian art then became Arabian art—by right of conquest. The followers of Mahomet still carried the sword and ruled by it; but then, the highest civilization was also carried along by them and we have them to thank for the preservation of the ceramic art to our time.

J. P. Cahoon, Salt Lake City, Utah.

I say "preservation" of the art advisedly. They gave us storehouses of it, as it were, for it has been preserved in that sense alone. It has been shelved for ages, or, if used at all, merely as a plaything and only today is it being really revived and applied largely, coming into its own again and taking its place among the greatest works of man.

In England, brick, terra cotta and pottery and tile were quite a little in vogue in the beginning of the Eighteenth Century, but after Queen Anne, there was a reversion to baser forms; wood and plaster predominated, and even in this country we still see perpetrations. awful nightmares doing duty under the guise of "Queen Anne" cottages, a synonym for anything that is too ugly to have any other name.

Here in the United States we have never had what might be called an era of burnt clay. We have only comparatively recently acquired great skill in that art. Up to a very short time ago, men built here with anything they could get easily and cheaply. We have had a galvanized iron era, a gingerbread wooden work era, concrete block crazes and all that sort of thing, but the popular prejudice has always been that when a man could afford to set rigid economy aside, then granite, marble and stone were the proper expressions for his building. Those materials exemplified, typified wealth, taste and culture. Brick and terra cotta were used where cheaper substitutes became necessary! Only now are our people beginning to realize the infinite possibilities of burnt clay and that it has a character all its very own, a distinct personality, an exalted one, and typifies that which is the most perfect, the most durable and yet the most elegant, plastic and yielding material known to the builders' craft. Today, at last, rich men use it as a matter of course, because they want it and appreciate it, not as did those of yesterday, merely because it does cost less money than granite or stone.

And yet, with us, much as we know about it and however well we do it, that art is in its very infancy. Its possibilities are endless, the field before us absolutely unlimited.

When I say that the art is in its "infancy," I must qualify that term. The infant is, indeed, a lusty one. We have made wonderful strides and, unlike most infants, we have profited by the experience of other countries and other times. Though we admit our extreme youth, we have picked up the art and are continuing it from where others left off, and we are not going over the whole process of growth, as most infants do. No country on earth makes better nor handsomer bricks than we do; our enameled bricks are the equal of any; our terra cotta surpasses in beauty and perfection that made by any other people at any other time. Why, the Winkle exhibit at the St. Louis Exposition taken alone, without considering any of the other beautiful works there, was sufficient to place us in the foremost rank of modelers and craftsmen, shoulder to shoulder with the makers of terra cotta in any other time or clime. It spelled perfection. Let the dust and mellowing influences of time touch it here and there and you will have people raving over it as they do now over a Della Robia. And our pottery cannot be classed far down the line.

Another thing this country has done in the matter of burnt clay of which we are justly proud. Here, some thirty years ago, was devised the first hollow tile building block for floor and partition construction. It came as an experiment, but in the thirty years that have followed it has not fallen short of the promise made for it then. It has stood the brunt of crushing strain and terrible fire, and that it has made a place for itself and is an accepted factor, not only in the art of burning clay, but is a most important and essential factor in modern construction, is proven by the fact that there are already over 700,000,000 square feet of it in place in this country today!

Just now, there is being waged, something of a puny warfare against burnt clay in all its forms by the advocates of concrete construction. Now, no man is a firmer believer in concrete—in its proper place—than I, and few, indeed, have used more of the material, but I tell you some engineers and the producers of cement have gone concrete-crazy. They advocate it as a panacea for all ills, the one material to be used under all conditions and to the absolute elimination of all else. They gabble to us today about hollow concrete blocks for exterior work, slab concrete floors and partitions for interior work, concrete everywhere. And they tell us that it is but a revival of the old Roman construction that was so perfect and that has stood so long. You will hear the learned engineers constantly prating about the splendid dome of the Pantheon at Rome, the greatest piece of vaulting that was ever done, as the apotheosis of concrete construction. Bless you, the main ribs of that magnificent vault are built, not of concrete, not of stone, not of steel, but of a far more perfect material, BRICK. The whole thing is essentially a brick construction with concrete filling between those brick ribs merely forming the sunken panels of the ceiling. The Romans did do some very important concrete work, however. They certainly used very wide spans in their floor construction. In that respect our concrete friends of today with all their vaunted engineering ability, are far more modest than were their predecessors under the Roman Emperors. But, then, conditions of our civilization would not permit of the old time temerity. We wouldn't stand for the loss of life that was quite permissible in these times. Today great commotion is made whenever there is a concrete collapse in which one or two poor workmen are killed, and Heaven knows such collapses are frequent enough. In the time of the Emporors slave labor was used, and a few hundred poor devils, more or less, was not a matter of grave importance, though we do find it recorded that Vitruvius, the famed military engineer of Augustus' first epoch, protested vigorously to his Emperor against the practice of building with concrete on account of the resulting accidents to and deaths of a great number of slaves, and he recommended the use of brick, in part or entirely, in place of concrete, as a better material and as far more merciful to humanity.

A Fire-Proof House—Laying the Foundation.

One of the theories advanced by our concrete friends in support of their concrete blocks and other forms of construction is that it is cheaper than burnt clay. One way to make it cheaper is to use, as nine-tenths of them do, unskilled labor. It is the contest between rude material and unskilled labor, with masses of greater volume and weight on one side, and on the other selected material and skilled labor, with masses of less volume and less weight. Take your choice.

There are a thousand legitimate ways of using concrete. It is admirable for foundations of buildings, filling of piers, railroad work, bridges, sub-aqueous work, anywhere used in compression and in masses, and where it is not exposed to intense heat. But when you come to use a thin slab of it twenty feet or more in span, for flooring purposes, you are incurring great peril indeed 'Tis no better than a slab of stone the same size, and a flaw in it is just as possible as in the stone; more so, far less skillful artificers have fashioned it, and there where there is a flaw is weakness, and the whole is but as strong as its weakest part; the folly of building of large units and using unskilled labor to make them! Folly? I call it a crime.

A Fire-Proof House—Laying the First Floor.

One-half the trouble is that the cement producers are ravenously clamoring for a new market and care not one whit how cement be used, provided they can sell it. There is danger that they will work out the construction of a most useful material by abusing it and incurring popular disfavor.

They claim for the construction that it is essentially "fireproof." The highest authorities tell us, and our everyday experience proves to us the incorrectness of the statement, that even when Portland cement is properly made its fire-resisting qualities may be considered to 600 degrees, but when subjected to subsequent drenching, the result is disastrous. Why, 600 degrees is no heat at all for a fire. At extremely high temperatures concrete will disintegrate, just the same as will limestone, or granite, or marble. And yet they wish to put those materials in comparison with brick as fire-resisting! Did you ever hear and see granite and limestone and marble in a fire? It all steams and pops and explodes and goes to pieces in a Fourth-of-July like celebration. Concrete makes less noise about its disintegration, particularly if water be thrown upon it, is far more insidious and is just as complete. The worst feature about it is that they persist in exploiting "cinder" concrete, naturally because it is cheaper, and "cinders," the country over, is a mere synonym for ashes, and when mixed with cement is just so much mud.

What was it that stood the test of the Baltimore fire, was it granite, or stone, or concrete? What has become of three little and much-vaunted examples of concrete construction there? No, it was the tall brick and tile fireproof structures that withstood that awful test. And they were only commercially fireproof at that, built at the minimum cost and, in most cases, years ago when comparatively little was known about fireproof construction, yet those are the structures which stood up, that suffered only 7 to 10% in their structural parts and that literally saved Baltimore, for had it not been for that splendid bulwark of brick buildings the fire would surely have had a clean sweep for miles. Aye, and perhaps the entire city might have been laid in ashes.

They are giving us hollow concrete blocks as something new. They were quite commonly used forty years ago and were then,

A Fire-Proof House—Starting the Brick Work.

as now, called "fireproof." But the Chicago fire of '71 demonstrated beyond peradventure, the inefficiency of concrete as fireproofing and clearly established the superiority of burnt clay over all known structural materials. And Baltimore but corroborates that experience. Burnt clay has stood the test of time and fire and water, and since the era of tall buildings it has been used in over 90% of them. You seldom hear even a concrete man offering any critisims of burnt clay. No, he but loudly proclaims that he has something cheaper, and, if he is very daring, "equally as good." The very best of concrete is made with Portland cement, slag, crushed clinkers, or real, completely carbonized, stem cinders, or broken brick or tile, and in such amalgamation, and in sufficient quantities and with sufficient steel to act as a good floor or wall construction, and made by skilled artificers, it is *not* as cheap as burnt clay and never will be as fireproof.

One objection the concrete people cite against burnt clay for building construction is that in using brick or hollow tile for floor arches, rolled steel members have also to be used, and that there is frequently great delay in procuring that steel. Thanks to Mr. E. V. Johnson, the son of the first really scientific adaptor, if not the inventor, of hollow block tile flooring, we can now put up a building entirely of brick and terra cotta, without any steel beams for the floors or steel rods for tying purposes, or steel or iron columns, an absolutely all-burnt-clay building. The same gentleman has also made it possible to use burnt clay products in lofty grain elevator bins, smoke-stacks, and that sort of construction where heavy brick walls are not possible. Indeed, we must credit him with many improvements connected with the art of clay burning.

Much ado is generally made about Underwriters' requirements and methods. Whatever the insurance people do in the way of construction is looked upon by the masses, and with some reason, as being the perfection of construction, a model to go by. The Underwriters some time ago decided to erect a model building in Chicago as a testing laboratory. All sorts of things were at first proposed. Alleged "slow-burning" wood construction (that has long been a pet foible of the insurance folks) concrete and whatnot. But thanks mostly to Mr. Johnson, the Underwriters, this time at least, built perfectly, and their laboratory in Chicago stands as a model of what ought to be done. It is built of brick and tile and terra cotta, a full-fledged, thoroughly fireproof, one may say, all-burnt-clay building.

John B. Millar, Toronto, Can.

The National Fire Proofing Company, of which Mr. Johnson is Western Manager also maintains a very fine laboratory in Chicago. There they test not only their own products, but concrete and everything that come to hand. Experiments in all classes of construction and all classes of material are constantly being made on a large scale, and the work being done scientifically and thoroughly is of the utmost benefit to the building trades and should receive their hearty support and co-operation. I know that the Company will be very glad to test anything in the way of new shapes of bricks, etc., that you gentlemen might wish to send them. There is no better equipped laboratory in the country, both as to testing apparatus and skilled physicists, engineers and chemists.

Speaking of laboratories and tests, that is one point about which I wish to take the brickmakers to task. You are making splendid products but, this is a progressive age. Perfect as is anything you may have, it is, in the vernacular "up to you" to strive to do still better. I believe that our brickmakers are too well satisfied. We are using the shapes and the molds that our fathers did. We have Roman shapes, Flemish shapes, and the molds of a time when Romanesque and crude classic forms were in vogue, and all that sort of thing, but it strikes me that we should go beyond all that and study the exact needs that our modern problems present, and then strive to put upon the market something that will exactly fit those requirements, and not try to beat the requirements into shape to fit what you are now supplying. Take molded brick, for instance, the accepted possibilities of ornamentation in that medium are indeed limited. We should experiment and design and work and fail and try again, 'til we get shapes and ornaments that will fit almost anything an architect can design. We should make bricks, not only the enameled, but ordinary face brick, of any color and surface. It wouldn't take long for architects to rise to the possibilities of such things and give us splendid chromatic effects instead of the monotonous fronts we see all about us in our cities. I am sick of red buildings, of buff buildings, and of gray buildings. Give us some other key to the gamut of colors. Most of us Americans are veritable cowards when it comes to color. Why, it would pay you thousands per cent. to have some really capable designer, an artist, not mere draftsman, give his whole time and attention to the possibilities of brick, to devising forms of cornices string courses, sills, window caps, panels, fashioned out of brick and susceptible by merely interchanging, of endless and most beautiful combinations. The things that you have under the guise of ornamental brick today, gentlemen, are not worthy of you. Well as we all think you have done, you could, with your splendid American ingenuity, skill and indomitable courage, do ten thousand times better.

And so, too, with terra cotta. I said we did splendid work in that material, and we do. Beautiful modeling, mechanically perfect assemblage. But we have fallen into the way of accepting certain limitations as absolute. I am not unaware of the difficulties there are in making terra cotta, but I also know that to us Americans, difficulties simply mean things that *must* be surmounted. Well, then, architects very frequently object to terra cotta solely for the reason that its parts, or units, have to be comparatively small. They have been used to cornices of stone for instance, where they use lengths of six, or ten feet or even more; they are accustomed to thinking that sort of thing massive and impressive by reason of that fact. Then why on earth not give them the same thing in terra cotta, columns in one piece instead of cutting them up in short drums, wide lengths of cornices? Oh, yes, I know the objections; big pieces warp and twist and shrink and the wastage is enormous. But go ahead and experiment! Spend some of your surplus in trying new ways of handling and burning your clay; it's worth it. The man who discovers how to do it will not only make a fortune for himself, but will pass down to posterity as one of the great inventors of this inventive time. And *that* indeed, is honor. We have electricity, why cannot, by some means of metal bands or coils in the core, heat be uniformly applied to all parts of the clay form at once and of equal temperature? There is some way of doing it. If I knew how, I would tell you. Or, if you cannot possibly make long pieces, then try and fix up the joints so they are not so conspicuous. Something can surely be done, you are not going to supinely give in and admit that they can do in stone or concrete or galvanized iron that which you cannot. Try to at least go one better. Work at it, experiment, and if you fail, why, try again! As the French say the "game is well worth the candle."

Building constitutes today, one of the most important functions of man. Countless billions of money are being spent in construction. The work calls for the brightest and best intellects. There is no room at the top for torpor and complacency. The Motto must be "On and Up." The place occupied by burnt clay today is a lofty one. That is recognized and conceded even by those most violently opposed to it, and is what hurts them most. It has reached that exalted position largely by its intrinsic merits, true, but it has taken good, hard, inelligent, earnest work to have those merits recognized, to put those very inherent qualities in tangible form, to make them of practicable utility. We must not relax in those efforts. We must not sit down and say work has been well done, we are pleased with it and will now rest. The thing is to be up and at it, hammer and tongs, shoulder to shoulder, in an earnest persevering, well-directed effort to not only keep burnt clay in that splendid place it has reached, but to force it ever upward, by every legitimate means in our power, until it becomes in fact that which we believe and know it ought by rights to be, the UNIVERSAL BUILDING MATERIAL! (Applause.)

Secretary Randall: Mr. Fitzpatrick refers to ancient brick, and I desire to say in this connection that I anticipated having on exihibition a brick taken from the Chinese Wall. It is owned by a resident of Philadelphia, but the owner prizes it so highly, even to the little particles of mortar adhering to the brick, that I did not care to assume the responsibility of its keeping. If there is any one here sufficiently interested to really care to see and handle a brick taken from the Chinese Wall, perhaps 3,000 years old, I will make up a little party and go out and inspect the brick. It is about four times the size of an ordinary brick and is intact to-day. This paper of Mr. Fitzpatrick's is a valuable addition to our trade literature and I think it would be valuable in pamphlet form.

Mr. Ittner: I move that the thanks of the Association be tendered to Mr. Fitzpatrick for his able and interesting paper.

Motion duly seconded and carried.

Secretary Randall: The next is a paper entitled "Electric Power for Clay Plants from an Engineer's Point of View," by Victor C. Vance, West Point, Iowa. Mr. Vance is not present, but he has sent his paper to be read for him.

ELECTRIC POWER FOR CLAY PLANTS FROM AN ENGINEER'S POINT OF VIEW.

By Victor C. Vance.

Mr. President and Gentlemen of the Convention:—

Manufacturers of clay wares have in the past been so absorbed in the fascinating problems appertaining directly to the treatment of clay in its metamorphosis from a clay bank into things of eternal beauty and utility that they have paid little heed to the marvelous development that has taken place during the past decade in the methods of producing mechanical power and of practically applying it. As the years came and went more and more machinery for grinding, mixing and molding clay was thrown out and sold for junk to make room for new and improved types, yet no particular effort was made to ascertain and check the loss incurred by the retention in service of antiquated and wasteful systems of power production and transmission.

Today, however, many have awakened to a realization of the immense leakage that is taking place in these departments of their plants, and are earnestly seeking for a means of correcting this constant drain. To these men, who are ever climbing the infinite ladder of Progress with untiring devotion, that ever wonderful force of nature, electricity, is beckoning with a happy smile of cheer and encouragement; not only as a more efficient means to an end in the transmission of power, but also, as wielding a large economical influence on the power producing appliances of their factories.

As the aim of this paper is to deal more particularly with the transmission of power rather than with its production, we will, for the present, assume that the efficiency developed by the prime motor—usually, on brick plants, a steam engine—is the same whatever method, whether belting, ropes, water, compressed air or electricity, be employed to transfer the energy from one engine to the machine where it is applied to the production of useful work.

Many practical trials of rope, hydraulic, and compressed air methods of power transmission have long ago demonstrated to engineers that these methods possess no particular economical features that would commend them, except in special cases, as substitutes for belting, crude and inefficient though the latter has proved. We will, therefore, gladly refrain from burdening our paper and wearying our audience by a tedious discussion of any excellence to which these methods might or might not be entitled, and will restrict our treatise to a consideration of the comparative merits of belted and electric transmission of power. By placing this limitation on the scope of our paper we are also enabled to avoid any explanations concerning the nature, source, and production of electricity, and to proceed at once, without further preamble or rambling, to the investigation of the question, the relative efficiency of belting and electricity as agents for the transference of mechanical energy, which is considered, by many, to be the most important issue involved.

No information was accessible relating to the actual efficiency performance of power transmitting appliances in brick factory drives; and we had recourse, therefore, for the sake of comparison, to the results obtained from practical tests of this class of machinery in mills and factories of other kinds.

The following indicator test was made by the writer a year or so ago to determine the frictional losses in the machinery of a shop where the conditions of operation were, in his opinion, about as dusty and tottery as those in the average brick factory. A 12 x 30 non-condensing Corliss engine was used to drive the machinery of the shop through a long line shaft with the usual equipment of countershafts, belts, and pulleys. Indicator cards were taken: 1. With the engine running light; that is, with the main belt removed from the engine band wheel; 2. With the engine driving line and countershafts, machines idle; and 3. With the engine driving full load, all the machines in operation. The horsepower, calculated in each case was as follows: 1. 2.67 horsepower, which represents the power required to overcome the frictional resistances of the engine mechanism; 2. 47.83 horsepower. Deducting the 2.67 horsepower consumed in operating the engine leaves us a net of 45.16 horsepower required to turn the line and countershafts and overcome the loss due to the creeping and slipping of belts and their resistance to bending over the pulleys at the rate of several hundred feet a second; and, 3. The full load cards showed a total of 82-25 horsepower developed by the engine. It is claimed by those who have made practical tests of the question that the power lost by friction in engines and shafting suffers very little variation in value from no load to full load when there occurs no change in the speed. If we deduct, then, from 82.25, the total power developed, the 2.67 horsepower used, as we have stated, in overcoming the friction of the engine, and the 45.16 horsepower which disappeared in turning the shafting and belts, we have a net of 34.42 horsepower, or about 43 per cent. of the brake power of the engine actually utilized by the machines. The remaining 57 per cent. of the energy developed was lost so far as any useful work was concerned in operating an unsightly and unwieldy transmission system.

It is possible that some of this loss might have been avoided by stricter attention to cleanliness in oiling and to the proper alignment of the shafting and bearings. However, in this connection Professor Chas. H. Benjamin of the Case School of Applied Science, in a large number of tests on power loss in shafting transmission, has shown that the average power required to overcome the combined friction of the engine and the transmission apparatus is 55 per cent. of the full load rating, thus leaving but 45 per cent. of the power at full load available for useful work.

We fancy, therefore, that a 50 per cent. transmission loss would be a conservative estimate in belt drives and shafting transmission of power on brick plants having considerable machinery in operation. This would give us at full load 50 per cent. of the power delivered by the flywheel of the engine available for useful work; at three-quarters load, considering, as previously stated, that the transmission loss is constant with uniform speed, at all ranges of loading from no load to full load, we would have but 33 1-3 per cent. of the flywheel power available for useful work; while, at half load, all the power developed by the engine would be required to turn the shafting, leaving nothing for operating the machines. We thus see how rapidly the efficiency of belted transmission decreases as the load falls below full load, and how fallacious any system of comparing the relative efficiencies of electric and shaft transmission would be which failed to take into account this diminished efficiency of mechanical transmission at loads less than full loads.

V. C. Vance, West Point, Ia.

In most well managed brick plants, however, the maximum daily output is usually fairly well maintained throughout the season's run so that we should have to reckon the average performance of the machinery on brick plants at full load or very nearly full load efficiency, which, as we have seen, is the most favorable state of loading for the economical operation of shafting transmission. If, therefore, the superior efficiency of electric transmission for brick factory drives is to be conclusively established, it must be calculated on the basis of continuous full load operation, despite the fact that the losses in the shafting system continue undiminished as long as it is turning whether the machines be idle or not.

In electric transmission all transmission losses cease with the stoppage of the motors except the four or five per cent. required to keep the armature of the dynamo in motion. Hence, it is obvious that the actual gain of efficiency by the electric system over that of shafting may be very much greater than the apparent gain reckoned on the aforesaid basis of full load efficiency for both systems. This discrepancy between the actual and apparent, gain would depend, of course, largely or entirely on the duration and frequency of the stoppages of the whole or any part of the brick machinery, for which, naturally, no general rule can be laid down.

The net efficiency of any electric transmission system depends on the individual efficiencies of (1) the generator, (2) the transmission line, and (3) the motors or other electric receptive devices.

In the ordinary brick factory installations the distances over which the power is transmitted are so short that, by a judicious selection of carrying wires, the line losses, which constitute a considerable loss factor in long distance transmission, may be rendered so small as to be negligible in the general transmission loss calculation. We have, therefore, ordinarily only the losses occurring in the generator and motors to take into consideration in figuring up the total efficiency of electric transmission of power for factory distribution.

In referring to electrical machinery electrical engineers distinguish between two kinds of efficiency—electrical and commercial. The electrical efficiency of a dynamo is the ratio of the current available for external use to the total current produced, a portion of the current output being consumed in energizing the magnets of the machine and in overcoming the resistance of the armature windings, etc.

The commercial, or actual, efficiency of the machine as a whole is always less than the electrical efficiency: as it expresses the ratio between the current energy available for useful work and the total energy required to drive the machine, which includes the power necessary to overcome not only the losses previously referred to under electrical efficiency but also all inherent losses due to friction, hysteresis, and eddy currents.

O. W. Dunlap, Bloomington, Ill.

In the case of motors the motion of the armature through the magnetic fields induces in the armature coils a current of force called the counter electromotive force which opposes the flow of the line current, or electromotive force (E. M. F.), through the armature windings. If the counter electromotive force of the motor and the line E. M. F. were equal, no current would flow in the circuit and the motor armature would not move. In practice, therefore, the counter E. M. F. of the motor never becomes quite equal to the line E. M. F. as it always requires a certain amount of current to operate the motor, even if no load is applied. The conversion of energy by means of electric motors is, therefore, attended with unavoidable internal losses which are identical with those taking place in the dynamo. There is the loss due to the resistance of the armature coils and the magnet windings, the hysteresis loss in the magnet cores, the loss due to eddy currents in the armature core, and the mechanical friction loss.

The commercial efficiency of the motor is the total energy delivered to the motor by the line current diminished by the sum total of the foregoing losses; or, in other words, it is the ratio of the useful energy delivered by the pulley of the motor to the total energy supplied by the mains; while the electrical efficiency of the motor is the ratio of the counter E. M. F. of the motor to the line E. M. F.

Since electrical efficiency is of particular interest only to the electrician, the user of electrical machinery being concerned merely with the net, or commercial, efficiency, it is to be understood then that when the term efficiency is used in what follows regarding electrical apparatus commercial efficiency is referred to.

The efficiency of dynamos and motors depends upon their character, construction, condition when tested and various other conditions so that it is impossible to establish a general rule for calculating their efficiencies,. And, in fact, it is usually the case that two machines of the same type, construction, and capacity seldom show exactly the same efficiencies when tested practically. Such differences of efficiency are in general, however, found to be slight and are considered practically unimportant.

Conditions of manufacture of electrical machinery have now been brought to such a high state of excellence that all reliable manufacturers of such machinery will gladly give to the purchaser a written guarantee of the efficiencies obtainable with their product at various fractional loads; such as, half, three-quarter, and full loads. The following table has been compiled to show the efficiencies that may be expected of dynamos and motors of various capacities:

¼ to ½ H. P.	40 to 50 per cent.
½ to 1 H. P.	50 to 60 per cent.
1 to 2 H. P.	60 to 70 per cent.
2 to 3 H. P.	70 to 75 per cent.
3 to 5 H. P.	75 to 80 per cent.
5 to 10 H. P.	80 to 82 per cent.
10 to 20 H. P.	82 to 85 per cent.
20 to 100 H. P.	85 to 90 per cent.
100 H. P. and upwards	90 to 93 per cent.

In addition to the foregoing table we give below a list of efficiencies that ought to be easily attained by a well-designed electric transmission system in actual practice on the average brickyard.

Transmission lines	about 100 per cent.
Generators	85 to 90 per cent.
Motors	75 to 90 per cent.

An average final efficiency of 66 per cent, which would represent that attainable with alternating current and induction motors, could, therefore, be unquestionably accepted as a conservative working figure for a fairly well arranged system of electric distribution of power in brick factory service; thus effecting a gain in economy of 15 per cent. over the belted system of power distribution, even considering the latter to be always operating at its most efficient load; namely, full load. Hence, if it requires the development of 100 horsepower to operate the factory when shafts and belts are employed for power transmitting, only 85 horsepower would be required to produce the same output if electric transmission were used. Assuming that it requires 7 pounds of coal per horsepower, which is a low estimate for the average non-condensing steam engine on brick plants, we have a fuel saving of 105 pounds of coal per hour or, say 1000 pounds, a half ton, for each day's run of ten hours.

A modest gain truly enough, but this, as has been intimated, represents the difference obtainable with shafting operating at its highest efficiency; that is, at a full load all day, and with the electric system operating at a moderately low efficiency figure; so that in actual practice no doubt a much better showing could be made in favor of the electrical system.

As a graphical illustration of the superior efficiency of electricity over belted transmission, at all ranges of loading from no load up to full load, the accompanying diagram has been prepared. Curves A, B, and C represent the final combined efficiency of the electric system including the generator and twenty, ten, and five horsepower motors, respectively, which are the sizes of motors most likely to be used in brick factory drives. Curve D represents the efficiency of shafting transmission. This curve is not extended beyond the full load ordinate, since at loads greater than full loads the slipping of the belts becomes so great that the efficiency becomes vastly reduced; and, if the load is increased much beyond full load, the slipping of the belts becomes so serious as to throw them off the pulleys.

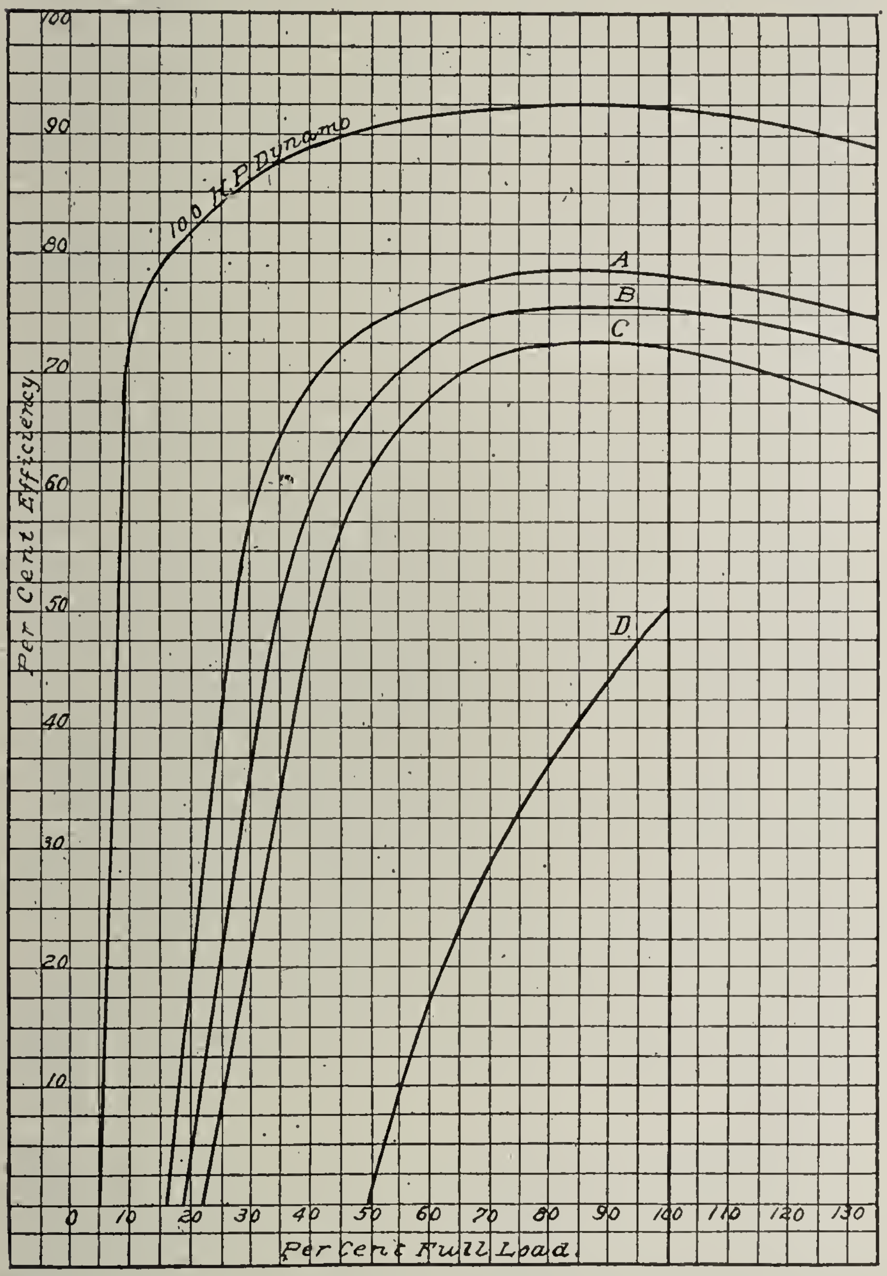
In addition to the generally higher efficiency of the electric system there are many other advantages to be derived from its employment in power distribution which must be taken into account when drawing up a comparative estimate of the belted and electric power transmission methods.

Oftentimes much benefit could be derived from locating the power plant at some distance from the machinery buildings, conveniently near a large supply of water or for other reasons. Were shafting transmission employed, this arrangement would most likely be out of the question since shafting imperatively requires that the engine be located as near to the machinery as possible. With electric transmission this distance may be increased up to any reasonable amount without serious difficulty.

In many other instances where some of the machinery is idle a portion of the time the use of electricity would admit of a subdivision of the power plant into two or more smaller units which could readily be made to work together or separately as required by the load and thus obviate the extreme wastefulness of a single large unit working on light loads. Moreover, the stoppage of a unit on account of breakage down would not so likely cause the entire suspension of brickmaking as would be the case in the event of the breaking down of the engine in a factory depending solely on one unit for power. By subdividing the power plant into smaller units we are likewise enabled to install a unit of such capacity that it would be adapted to work economically on the small night loads ordinarily carried on brickyards; such as, pumps and fans, and at the same time provide the often sadly needed lighting service.

As an illustration of our meaning in this regard let us suppose that the day load of the factory requires 200 horsepower for ten hours during the day, and at night but 80 horsepower is needed for lighting and fans. The losses incurred by operating a 200 horsepower unit on an eighty horsepower load, or less than a half load, would certainly amount to a considerable figure which could largely be avoided by the installation of a unit of sufficient capacity to take care of the night load and a second unit of such capacity that the two combined would be powerful enough to drive the day load.

Again, pumps and fans are usually scattered about the plant in such a promiscuous manner that no method could possibly be devised to connect them with the main engine in an economical manner by means of shafting of any kind.



To obviate the use of shafting for this purpose it is customary to operate each pump and fan by its own steam cylinder connected to the main boiler by long lines of piping in which condensation and leakage generally cause enormous losses. Condensation losses may be oftentimes greatly reduced by insulating the pipe lines with a good non-heat-conducting covering, and leakage practically eliminated by care in making up the pipe connections. However, at best, the use of small steam cylinders at any great distance from the boiler for any purpose whatever is to be deprecated on the score of economy.

Among other drawbacks to the use of shafting for power transmission is the space occupied by long lines of shafting and countershafts with their ponderous load of pulleys and belts, the dust that belts and pulleys are constantly raising; and the trouble and stoppages that belts continually cause by running off the pulleys, tearing apart, and other tricks of similarly vexatious nature always at times when the delays necessary to repair and replace them creates the most confusion and loss.

Electric currents for the transmission of power are divided into two classes, direct and alternating. The abbreviations for these in electrical nomenclature are D. C., direct current, and A. C., alternating current. Direct currents are those that do not change the direction of flow while alternating currents are those in which the direction of flow is reversed many times per minute.

Each of these two classes of electric currents has its advocates for power transmission, and each has its own peculiar characteristics which determine arbitrarily the kind of electro receptive device that it is possible to actuate with that particular current, and which also effect more or less considerably the method of installing the aforesaid devices. Any attempt at a comprehensive explanation of electric current characteristics and the manner in which they operate to modify the distinctive features of the various electric devices would manifestly be highly irrevelant in a paper for the consideration of clay manufactures, since it would lead us into a technical discussion intelligible, for the most part, only to those fairly well versed in electrical terms and definations. About all that we can consistently do here is to indicate the more important advantages and disadvantages of each system for brick factory drives, basing our conclusions on the practical results obtained with similar apparatus in mills and factories of other kinds.

Owing to the rather smaller expense of maintenance the alternating current system of electric transmission is rapidly forging ahead of the direct current not only for long distance transmission, a field almost exclusively belonging to the alternating current, but also for the short distances applying in factory distribution. There are, however, many competent engineers who hold that the lesser initial cost and the higher efficiency of the direct current apparatus for the latter class of services more than offset any advantage the alternating current may possess from its smaller repair and depreciation bills.

The principal difference in the efficiency of the two systems occurs at the point where the electric energy is converted into mechanical motion; namely, in the motors; and this is due to the fact that the rapid reversal of the direction of current flow in the alternating system sets up, or induces in the conductors, in accordance with well known electrical laws, additional currents which impede the flow of the main current. In order to overcome the resistance engendered by these induced currents a portion of the energy of the main current must be expended, thereby causing a falling off in efficiency as compared with the direct current, which does not have these impeding currents to contend with.

As stated previously, this difference of efficiency is most marked in the motors of the two systems. The reason for this is, that whenever a conductor in which an alternating current is flowing is placed in near proximity to a mass of iron the inductive action is greatly enhanced, and as a consequence the impeding currents have their resisting power largely augmented. As iron is, of course, indispensable to the construction of electric motors whether of the direct or alternating type, the looses from induction in the alterating current motors cannot be eliminated. Careful designing and first-class construction will, however, prevent the loss of efficiency due to inductance from assuming unreasonable proportions.

As may be surmised, the rapidity of the reversals also modifies in a great degree the inductive action of alternating currents, the fewer the alternations per unit of time, the feebler the induced currents, and, consequently, the higher the efficiency other conditions being equal.

According to electrical definition, two alternations constitute a cycle, and the number of cycles developed in one second of time is the frequency of the current. Thus, a current making 3000 alterations per minute is said to have a frequency of 25 cycles which would mean that the current passed through twenty-five cycles or 50 alternations per second, and a current making 16000 alterations per minute would have a frequency of 133 cycles per second, In power transmission and lighting, alternating currents are used which make from 3000 to 16000 alternations per minute; that is, from 25 to 133 cycles per second.

The frequency to be employed depends on the use to which the current is to be put. The lower frequency values are used where the load is highly inductive; such as, a wholly motor load, and the higher frequencies, where the load is practically non-inductive, as in lighting service. The lower frequencies cannot be used for the latter class of work on account of the flickering of the lamps; and the tendency of the practice today is to adopt a frequency of 60 cycles per second as the standard for both power and lighting apparatus. This is well suited for both lights and motors and affords the advantage of operating both from the same machine, which is often quite convenient, especially in smaller power plants, though it is in general more satisfactory and not necessarily more expensive to run the lighting service independently of the power service.

In chosing a system of electric transmission for power distribution in brick factories it is necessary to devote our attention chiefly to the various classes of motors as the successful operation of the plant with a view to economy depends primarily and almost entirely on the correct adaption of these to the work they have to do.

The direct current was at first the only system available for electric distribution of power in factories, and naturally much of the blame attendant on the early difficulties of operation was ascribed to inherent and incurable deficiencies of this particular system; whereas, the facts are that the great majority of these difficulties were due to the want of knowledge of how to apply the direct current motor to the various classes of work.

Manufacturers of electrical machinery in those days devoted their energies chiefly to the improvement of the distinctive electrical features of their product and neglected to inquire into the mechanical requirements. Yet despite this vital neglect, the industry throve with amazing vigor. Latterly, however, dynamo and motor designers are rapidly mastering the mechanical problems encountered in applying motors to the driving of machinery, and are successfully devising new methods of meeting the additional requirements demanded by the ever-widening field of electrical usefulness. The result is that today electrical machinery is as nearly perfect in every particular as man's skill and ingenuity is capable of producing.

Besides the minor difficulties incidentally arising in the exacting service of driving all kinds of factory machinery under all sorts of conditions, there were primarily three paramount problems requiring solution in the operation of electric motors: 1. Methods of producing a strong starting torque; 2. Means of varying the speed of the motor as might be desired with uniform of variable loads; and, 3. The elimination of commutator troubles.

With direct current motors it was easy to introduce resistances at the proper points to control the torque and speed, but the heating engendered in these resistances caused a loss that it was desirable to eliminate. Means in which little or no loss of energy occurs through heating have been invented for starting motors and varying their speed, but for most practical purposes, especially in clay plant operation, the economy effected by the introduction of such devices will scarcely prove sufficient to provide an adequate return on the additional outlay required for their installation.

Edwin Brockway, Brockway-on-Hudson, N. Y.

While progress was being made in these directions, commutators had not been forgotten; in point of fact, they markedly declined to allow themselves to be forgotten, and much study was given to the improvement of their mechanical construction with such satisfactory results that, at the present time, little difficulty is experienced in their operation, provided they are kept reasonably clean and the brushes kept properly fitted. To do this may require considerable attention under the trying conditions of clay plant service. Special emphasis must be placed on this matter of cleanliness, since in the dusty atmosphere prevailing in clay plants motor commutators are apt to become so dirty in an hour or so that much sparking and heating will take place. owing to the increased friction and the imperfect contact of the brushes on the commutator. Such sparking and heating rapidly eats away the commutator segments, and its continuance for any considerable length of time will likely damage the commutator so badly as to require its turning down in a lathe, if not its entire replacing. Commutators are exceedingly expensive, and economical considerations would, therefore, demand that the machine be given the care necessary to prevent its injury from uncleanly conditions.

Most electrical manufacturers turn out a line of motors that are equipped with dust proof casings so-called, and are especially designed for service in dusty and gritty locations. These casings reduce trouble from dirt to a minimum, but the dust will work through into the mechanism in greater or lesser quantities and the machine will suffer more or less if it is not given regular and careful attention. It is best to have a competent electrician employed to attend to this class of machinery, as he will frequently be able to avert serious trouble by discovering and remedying faults at their inception, when an attendant unfamiliar with electrical machinery would not be aware, until too late, that anything unusual was developing. It will invariably prove a paying investment to employ skilled attendants on electrical apparatus.

Direct current motors are divided into three classes according to the methods employed in making up their windings: 1. Series wound; 2. Shunt wound; and 3. Compound wound.

In the series wound type the whole current from the line is led through the armature and thence around the magnets. This arrangement produces an exceedingly strong magnetic field and gives the armature a very powerful starting torque. The motor is, therefore, capable of starting under very heavy loads, which quality renders the series motor of the highest utility wherever the motor must start up under heavy loads. This motor is especially desirable in street railway, automobile, elevator, and traction work generally, but its tendency to run away and destroy itself under light loads makes it unsafe for driving all kinds of machinery. A second feature which makes the series motor rather unsuitable for operating stationary machinery is the continual decrease in its speed as the load is applied. This change of speed is, however, considered no disadvantage in street railway work, or cranes, and other machinery of this class in which a variable speed is permissible.

Outside of traction and hoisting work, the shunt wound motor has been the type most extensively employed. This is largely due to its speed regulating features which adapts it to the driving of almost all classes of factory machinery not requiring too great a starting torque.

In the winding of the shunt motor the main current does not flow around the field magnets as in the series motor, but is returned to the line directly after passing through the armature coils, while a portion is shunted by means of a branch or shunt circuit around the magnets in order to energize them.

The speed of this type of motor falls off somewhat as the load is applied, but in well-designed machines the decrease of speed for this cause is slight and practically of no concern. Moreover, if the load should suddenly vary from full load to no load, there would be no racing as would occur with the series motor with a similar variation of loading, since the shunt motor automatically adjusts itself with no great variation of speed to changes of load.

The winding of the compound wound motor is a combination of the windings of the series and shunt motors. Although this type of motor is particularly well adapted for many classes of work, it is not now much used as the other two types have been found qualified to fulfill most practical requirements. Its windings may be connected up to give either a strong starting torque with the variable speed fault of the series motor or a constant speed with the smaller starting torque of the shunt motor.

Where the load is subject to frequent and wide fluctuations, the compound wound motor will be found in most cases more satisfactory than the series or shunt motor. Such conditions of loading are frequently found with the driving of some kinds of machine tools, printing presses, pumps, brick presses of the dry clay process, and similar work.

The foregoing types of direct current motors may be provided with a reversing switch and run in either direction at will—simply by moving the switch to the proper positions. Before equipping the motor with a reversing switch, however, if the brushes are placed perpendicular to the surface of the commutator and the holders must permit them to be placed in that position, since the machine will not operate well in the reversed direction if the brushes are of the inclined design.

Alternating currents are termed single phase, two phase, or three phase accordingly as the current receives one, two, or three impulses during each half cycle or alternation.

Since there are objectionable complications involved in starting motors with the single phase current, the vast majority of alternating current installations for power transmission purposes consist of either the two or the three phase system. Both of the latter possess characteristics which render them readily available for producing the shifting, or the so-called rotating magnetic field necessary for actuating alternating current motors.

Two principal types, or classes, of motors for use with the alternating current are distinguished (1) Synchronous motors and (2) Induction motors.

Both types are used extensively, but in order that a clear idea may be gained of just what classes of machine driving for which each is adapted, it will be necessary to point out some of their distinguishing features.

We will first consider briefly the synchronous motor. These are so called from the fact that they always run in synchronism, that is, at the same frequency with the alternating dynamo which supplies the current, and the two, dynamo and motor have very nearly the same construction. This type of motor is made to operate on single phase as well as on two and three phase currents. The peculiarity of starting them with the single phase current is worthy of note. If a synchronous motor be connected directly to a single phase generator, the former will not start on account that the current is rapidly reversing in its armature coils which causes the armature to tend to turn first in one direction and then in the other. These opposing impulses follow one another so quickly that the effect on the armature is nil; and it, therefore, does not get started from a state of rest. If, however, by some external means, say a direct current motor the synchronous machine is first run up to such a speed that its frequency is the same as that of the dynamo and then switched into the circuit, the impulses of the incoming current will act in unison with the magnetic fields induced in the motor, and the armature will continue to rotate. Because of this inability to start of its own accord single phase synchronous motors find little practical application.

The two and three phase motors of the synchronous type do not require to be started by external power since the current impulses traverse the armature coils in such a way as to exert the requisite turning effort for starting the motor and running it up to synchronism with the generator. All synchronous motors, however, require an excessively large current for starting and cannot start at all under heavy loads. This defect renders them ill-adapted for service where heavy loads are required to be started and stopped frequently, as it would be necessary to connect them to the load through some form of friction clutch so that the load would be disconnected when starting up until the motor had acquired the proper speed. After they have once got up to synchronism, or in step as it is commonly called, they may be very heavily overloaded before exhibiting any signs of distress. In these motors the armature lags a small fraction of a revolution behind the armature of the dynamo. The heavier the load, the greater this lagging, until, if the load grows too excessive, the slipping back of the motor armature becomes so great as to throw it out of step with the generator, and the motor comes to a standstill. A well designed synchronous motor ought, however, to endure about three times its full normal load without dropping out of step sufficiently to cause its stoppage.

The high efficiency of this type of motor, which closely approaches that of the direct current motor, and its absolute uniformity of speed render it admirably suited for factory drives where a large starting torque is not required and where it is unnecessary to start and stop the motor frequently, and also where the extra installation of small direct current generators for supplying the necessary direct current to energize the magnets of the synchronous motor is not objectionable.

In direct current and synchronous motors the current flows into the armature from the line and these currents exert a reaction upon the stationary field of magnetism to produce the motion of the armature. In the induction motor a two or three phase current is conducted through the windings of the machine in such a manner as to produce a magnetic field which constantly shifts from one magnetic pole to another and forms what is called a rotating field of force. This moving field induces currents in the armature coils of the motor which react on the rotating field and produce the required motion. It is from this inductive action of the shifting field on the armature coils that the motor derives its name, induction motor.

Notwithstanding its somewhat less efficiency, the induction motor is probably superior, as constructed today, to either the direct current or the synchronous motor for electric driving in factories; more especially in clay plants where conditions are so adverse to cleanliness of operation. It may be started at any time and from any place where it is convenient to locate an ordinary switch, in either direction of rotation and under any condition of load and speed within the range for which it has been designed. It may also be used in connection with a single phase current by installing the proper starting device, which splits the current into two or three phases until the motor is brought up to speed when it is cut out and the motor continues to rotate in synchronism, or nearly so, with the single phase current. Unlike the synchronous motor no direct current is required for energizing its field, and because of the total absence of collector rings, brushes, and moving contacts of all descriptions, it requires but little more attention than an ordinary piece of shafting.

Motors of this type will stand more rough usage than any other electrical machine manufactured. Almost the only care necessary for their maintenance in running condition is to keep the bearings properly oiled, with an occasional blowing out of the accumulated dust from the windings. If an induction motor is too heavily overloaded, it will slow down and stop, thus notifying the attendant of the excessive overload. If the load is not immediately reduced, the motor is pretty apt to become considerably over-heated. For this reason, it is always best to install fuses in the lines to protect the motor, and to obviate the danger of a burn-out from inattention.

For service where an extremely large starting torque with a wide range of speed is desired, the induction motor is hardly the equal of the direct current motor. But while the former is not so well adapted for varying its working speed as the latter, there are ways of varying its speed within a considerable range. Space, however, and the technicalities involved will not permit a description of them here.

In applying the electric motor to the driving of machinery there are a number of conditions to be taken into consideration. The first problem consists in determining just how the motor is to be connected to the machine it is to drive, assuming that the machine is to be driven singly by an individual motor. The best method of all is to fasten the motor to some part of the frame of the machine, driving the latter directly or through a good set of cut gearing. In this way the motors and the machines constitute a very compact arrangement, always maintaining their alignment and occupying the least possible space and leaving the space overhead free of whirring pulleys and flapping belts.

It is not always feasible to fasten the motor to the frame of the machine. This is a condition frequently met with on plants in which electric motors have been substituted for shafting and belts to drive the old machinery on whose frames it is impossible to find space for attaching the motors. In such cases the next method would be to set the motor as near as possible to the machine to be driven making the connection with a system of gearing. If this method cannot be profitably applied, a last resource is to drive the machine with a belt, setting the motor on the floor, bracketing it to a nearby wall, or suspending it from the ceiling, as may be most advantageous. On the whole, however, belt drives are not to be recommended, as they are not nearly as efficient as a good system of gear driving.

Edward C. Stover, Trenton, N. J.

Another point that must not be overlooked in locating motors is to see that they are placed so as to be readily accessible for cleaning and repairs. We have frequently seen them placed in such out of the way and inaccessible locations that whenever repairs were required it was necessary to spend several hours dismantling other machinery and removing obstructions in order to get to the motor.

The relative speeds of the motor and the machine to be driven must be carefully inquired into. Electric motors are generally made to revolve at high rates of speed in order to lessen the cost of construction, and in selecting a motor for any kind of machine, it is necessary to make sure that the speed of the former is not too great to be reduced to that of the machine through the gearing or belts.

The capacity of the motors to be used is a problem for the solution of which no general rule can be formulated. Each plant is law unto itself, and must be studied and arranged in accordance with the operating conditions of the highest efficiency is to be obtained. With brick machinery operating ten hours per day on a load varying from 75 to 125 per cent. of full load and requiring 3 to 10 horsepower and upwards for each machine, the highest economy could doubtless be effected by the use of individual driving. But in the case where several machines requiring but one or two horsepower each are situated favorably for connecting to a short length of shafting, it might be better economy to drive the whole group with a single motor, as the efficiency of a larger motor would be considerably more than the combined efficiency of the smaller motors needed to drive each machine independently. Just how such a group of machines could be connected in this way to produce the highest efficiency would depend on the number liable to be in operation the same hours per day each was run. On the other hand, if the machines were likely to be run separately for but a short time each day, individual motors drives would unquestionably prove more satisfactory than grouping the machines. By a careful consideration of this feature plants operating normally on half load a large portion of the time could possibly secure an all day efficiency nearly or quite equal to full load efficiency.

The capacity of the motors to be installed will naturally be dependent upon the power required to operate the machines and the manner in which the latter are to be grouped. Motor capacity, however, need not exceed the average rated power consumption of the machine or system of machines, since motors, as we have already pointed out are able to endure considerable overloads for short periods of time; and if such overloading is not entirely too excessive, the efficiency of the motors will not be seriously diminished.

In driving dynamos there are three principal methods from which to make choice, (1) by means of belts and countershafts, (2) by belting direct from the engine band wheel to the dynamo pulley, and (3) by connecting the armature shaft of the dynamo directly to the engine crankshaft. The latter is the modern, up-to-date method, and will eliminate the difficulties inherent to the operation of belting. Its first cost is in general rather larger than either of the other two methods, but if the cost of the maintenance of belting and countershafts be taken into consideration undoubtedly a balance could be struck in a short time in favor of the direct connected unit.

Distribution should preferably be direct from generators to motors without the interposition of storage batteries, rotary converters, transformers, or other energy consuming devices. Of course, circumstances sometimes render the use of these contrivances absolutely indispensable, but their introduction wherever avoidable is exceedingly bad practice.

E. O. Simons, Los Angeles, Cal.

The voltages that may be used for distribution purposes are usually classified as low or high tension systems. Low tension systems are considered to comprise those whose voltage is less than 100 volts; while a high tension system refers to a system whose voltage is 1000 volts or higher. The voltage usually employed for lighting service is 110 or 220 volts. Incandescent lamps and, indeed, no electric lamp can be constructed that will operate at a much higher voltage than 220; and on lines carrying higher voltage lamps, when required for lighting, are connected between the mains in a particular way termed "in series" by electricians. Thus, if the line carried 440 volts, four 110 volt lamps or two 220 volt lamps would be connected in series across the mains. In general it is better to select a low tension system for factory distribution, as the difficulty of insulation is not so great and the lighting service will be more satisfactory, the fewer the lamps we have connected in series.

Low tension dynamos and motors are usually wound for the standard voltages 110, 220, 400 and 500. Either of these will prove satisfactory for factory transmission of power. The lower voltages are, as has been intimated, somewhat superior for lighting service and are more easily insulated. The 400 and 500 volt systems present, however, no difficult insulation problems and tend to reduce the copper wire cost and the line transmission loss. An additional point in favor of the two latter voltages is, that, while not necessarily fatally dangerous, they are yet sufficiently vicious to command the respect of the workmen, and tend to prevent mischievous tampering with the lines and apparatus, at least, while the current is turned on. (Applause.)

On motion of D. P. DeLong, Glens Falls, N. Y., duly seconded, a vote of thanks was extended Mr. Vance for his paper.

Secretary Randall: This brings us to the first number on this morning's program, a paper, "Brickmaking on the Pacific Coast," by E. O. Simons, Los Angeles, Cali. It was my pleasure to pay Mr. Simons a visit last summer and go with him to his plant. He promised to come to the convention and present his paper himself, but something has transpired to detain him, but he has sent his paper which I will read for him.

BRICKMAKING ON THE PACIFIC COAST.

By E. O. Simons.

Mr. President and Gentlemen:—

Brickmaking on the Pacific Coast dates back to a very early period, and is, no doubt, as old as in any section of our country, and to cover all the grounds would be an exceedingly burdensome task.

The old ruins in parts of our State, where a form of civilization once existed previous to the arrival of the white man, have their remnants of pottery and brick. Specimens of the pottery are similar to those found in Old Mexico. The brick are of the unburned or adobe kind. Since then the clay interests of the Coast have developed, and we at the present time have every class of machinery, every kind of kiln and most every contrivance that is known to the clayworking industry in operation in our State.

Our clays are numerous and composed of various ingredients, a large per cent. having derived their source from the disintegration of our granite mountains and hills, where, through ages of time, they have disintegrated and waters have washed them and deposited them in their present beds. The clays from this source, owing to a large per cent. of oxide of iron, burnt red. We also have deposits of clay burning white and all intermediate colors. When the same has been carefully selected it makes an excellent brick, superior in many respects to the brick made in Eastern countries. Paving brick are now being made by our friend Mr. Frost, which are excelled by none. Of late the attention of the clayworkers is being directed to terra cotta and building tiles.

We also have with us the promoter, who derives his livelihood from the rake-off he gets from the manufactorer of machinery. He makes brick with this, or that process, sets them, burns them, and delivers them for less than a dollar a thousand, but it is all on paper.

Our country, like yours, is strewn with mistakes and wrecks; people imagining that all they need is a machine, power to run it, an engineer at the throttle, someone to stand around and look wise and brick are made and burned without any skill whatsoever; and many are the sad stories we listen to from such ill-advised people.

But casting aside our troubles, looking on the bright side, we find in California many very prosperous brickmakers. We have many up-to-date and well equipped yards. We see the gleam from many an eye that denotes prosperity.

Taking up our Bible, and reading of the trials and tribulations of the ancients, we find that the children of Israel also had troubles, and one of them was owing to the making of brick. They were compelled to make brick without straw, meaning, as I would interpret it, a burned brick. To make the brick with straw, all that was necessary was to chop up the straw, mix it with clay and sun dry it. To make brick without straw, they were compelled to rustle the wood—no doubt from some far mountain—and this made additional labor, and they, being no different from our brickmakers of today, went on a strike and rather than to make burned brick, followed Moses forty years in the wilderness. While I am interpreting the Scriptures to you, I wish to say that my Biblical researches have convinced me that the feat which Sampson accomplished in breaking the great columns which wrecked that mighty building was not due to his strength, but to the fact that the columns which gave to the building its main support were erected of reinforced concrete, or cement blocks, and it only needed a little shove to push them over. (Applause.)

The writer considers it his duty every year or so to pay a visit to your Eastern cities and have called on, and personally met the representatives of many of your largest clayworking industries of the East, and from them has derived much information, and he must confess that your troubles are our troubles, that your mistakes are the same as our mistakes, and the same cry of low prices, too much competition and not enough bricklayers is re-echoed from every State in the Union.

With us, the sand-lime or mortar brick has come and gone, and the sparrows now make their nests in the elevator buckets and shoot-the-shutes on the screens, and after a loss of many thousands of dollars, the investors in such plants have learned that carbonate of lime and sand is only mortar, no matter whether it is dried quickly or slowly, and if they want their building to have an appearance of sand finish, it is cheaper to plaster it with a coat of lime mortar than to press the same into bricks and pay $6.00 a day for laying them up.

The cement block and re-inforced concrete fad is now having its rage. In dozens of back yards, and on back streets can be seen little hollow block plants, the poor workman, laboring with might and main to tamp sufficiently hard his one to eight mixture so that it will withstand the slight test imposed upon it, and everywhere you will see rejected and condemned cement blocks. Buildings erected from this material are constantly being torn down, but the foolish man labors on, thinking that by some miracle the tides will change and his one to eight mixture will get harder, and his block will become more dense, something which must first be done to admit him to any standing as a manufacturer of a building material, but my prediction is, to him it will never come. Something cannot be made out of nothing, and if he adds to his block sufficient cement, he cannot compete with burned clay product, and he must labor on and await his time.

At the present time an assumingly new class of construction is being revised. Concrete, in which a few bars of twisted iron are being inserted, is being used in some of our large buildings for both exterior walls and floors, and the new name that is applied to it is "reinforced concrete." Many troubles are befalling the over-zealous contractor who so foolishly undertakes to carry out this form of construction. It is being largely advertised by so-called architects and engineers on the ground that it is cheaper. Already one contractor has lost at least $100,000.00 on this kind of construction, abandoned the job and as I sit in my office, writing this letter, I can hear the constant blow of the sledge hammer loosening it up in great chunks, where laborers convey it to the front of the building, where it is dumped into wagons and hauled to the river. The socalled architect lays the fault at the door of poor cement—a sad blow to our Iola, Kansas, friends.

I have in my hand, a four column newspaper article, written by one of the leading promoters of plaster of Paris, and twisted bars, saying that he has lately discovered that the pyramids of Egypt were built of concrete; and the dome of the Pantheon in Rome, one hundred and forty feet in diameter, was constructed of the same material; that the ancient Greeks and Romans used it exclusively, inferring that the civilized world was in darkness till he received his inspiration.

But we, as manufacturers of burnt clay products, are abiding our time believing that the great builders of the past, who used our material in the structures which still remain to tell the tale, were not fools, and when twitted by our reinforced friends that our business will soon be ruined, we tell them that it is unnecessary to have any walls or floors at all to a building, that all you need to do is to think you have a building, and you have one—suggesting Christian or Mental Science for the erection of structures.

But it is an ill wind that blows no good. We have recently formed, in the city of Los Angeles, an organization of all the burned clay interests, having about four thousand interested parties connected; elected officers, and are pursuing a campaign of education on such lines as will increase the use of our product, and must say that within the few weeks that our machinery has been in operation, we have accomplished marvels. We find that the manufacturers of all other products except our own have agents in the field, are writing articles for papers and using every means to educate the public to use their class of material, while we, as brick men, were sleeping; but we have been aroused; we have buckled on our armour; we have sharpened our swords, and we see victory ahead.

Now, a word of suggestion to the brickmakers throughout the United States: Form an organization, employ some good writers and engineers, publish a journal that can be distributed and will be read by architects and owners. Educate the public the same as the cement men are trying to educate them, the same as the iron men. Do this without delay and the star of success will reappear. (Applause.)

President Copeland: This is an excellent paper and brought out some good points.

George O. Berry, Columbus, Ga.: I move the thanks of this convention be extended to this brother brickmaker on the Pacific Coast for his excellent paper.

Motion seconded by Mr. Ittner and carried.

Secretary Randall: The next number is a paper on "The Application of Refractory Materials" by A. J. Aubrey, St. Louis, Mo.

Mr. Aubrey, St. Louis, Mo. I rather think this paper should more properly be entitled "A Review of Refractory Materials." However, I presume it does not matter much.

REFRACTORY MATERIALS AND THEIR APPLICATION.

By A. J. Aubrey, St. Louis.

While metallurgy has made rapid strides forward in the advancement of science, the study of refractory materials has lagged behind like the proverbial race horse that "also ran," and the writer ventures the asertion that there is less available knowledge at hand concerning this one subject than of any other factor of so vital an importance to the practice of metallurgy and to other manufacturing interests. There is a dearth of scientific data on this subject and while the physical constants of even some of our rarest metals have been determined, practically nothing along similar lines can be found in our various reference books concerning refractory materials.

The writer has attempted to prepare a paper outlining the scope and possibilities of proper study and research in the field of refractory material, offering a few personal observations, with a view not of illuminating this convention, but rather of presenting to you a few facts with which some of you are undoubtedly familiar.

Refractory is the term generally applied to materials that are fusible, only at of above 3000° F., approximately Seger Cone 27. Broadly speaking, refractory materials are materials infusible at the temperatures at which they are used.

Classifying and arranging the list of refractory materials, we have them as follows:

First. Carbon and Carborundum; Withstanding the highest temperatures—4000 F., to 7000 F. and above.

W. H. Hunt, Cleveland, Ohio.

Second. Magnesite, Bauxite, Lime, Dolomite and Chromite: Withstanding medium high temperature—3400 F., to 4000 F.

Third. Silica, Flint Fire Clay Kaolins and Plastic Fire Clay: Withstanding low temperatures—2800 F., to 3400 F.

Briefly describing their uses and characteristics we have first:

Carbon: This is a material that one seldom stops to consider as a refractory on account of its combustibility, but which is nevertheless the most highly infusible of all refractory materials known. At the highest temperature attainable it volatilizes, and at all temperatures above 100° C., it combines readily with oxygen, for which it has great affinity. It can only be used as a refractory material, therefore, in cases where it is not exposed to the atmosphere, for example: in an air tight chamber such as the inside of an electric resistance furnace.

A recent patent, by F. Bolling, covers the production of carbon blocks covered with carborundum. The carbon block of desired form is embedded in a mass of finely powdered silicon, or borun carbide, and by means of a "special firing process" the surfaces of these blocks are transformed into carborundum by "absorption." Beyond its use for lining electric furnaces carbon finds little use as a refractory material, but inasmuch as the electric furnace is on the increase, it bids fair to be used more extensively in the future.

Carborundum and the Silico-Carbides: Carborundum is composed of seventy parts silica, and thirty parts carbon, and is manufactured from coke and sand in the electric furnace at Niagara Falls.

Silico-Carbides: : The silico-carbides, or siloxicon are compounds of oxygen, silica and carbon in varying proportions, formed at temperatures below the formation of carborundum and are therefore less refractory. Carborundum is infusible at 7000 F. and is unaffected by gases such as oxygen, ozone, chlorine or bromine at 3000 F. At temperatures ranging considerably above 3000° F. it is attacked by chlorine and oxygen, the latter forming a coating of silica over the grains at these temperatures. It is decomposed by fused alkalies and is decidedly acted upon by basic slags at high temperatures, but at temperatures around 3000° F. is not affected.

For making carborundum blocks tar and glue are used as binders, after which the blocks are subjected to a firing process at high temperatures consisting of a period of long continued oxydation which forms a coating of silica over the grains and binds them firmly together. Fire clay and sodium silicate are also used as bonds; for ordinary temperatures; that is, below electric furnace temperatures. A lining bonded with sodium silicate softens at high heat. Fire clay serves better for this reason. Brick coated with carborundum have a hard surface that cannot be scratched with the hardest tool steel. By means of carborundum you can create a dense, hard impenetrable surface on a porous flint-clay brick.

Mr. E. Kilburn Scott in a paper heard before the Faraday Society on "Refractory Materials," cites several instances of the recent uses of carborundum as a wash over fire brick, showing that it gave decided improvement and that it was not necessary to have a homogenous body of carborundum in order to take advantage of its properties.

He cites an instance of a welding furnace, in which the lining was coated with carborundum, that showed no serious effects after six months service. He also mentions its use for repairing cracked gas retorts, pointing the joints of brickwork in by-product coke ovens in order to make them gas tight, protecting iron pipes that are subjected to high heat in blast furnaces, etc. In the latter case the life of the iron pipes was increased from two and one-half to nine months. When used as a covering for iron or metals, the metal must be kept heated as the coating of carborundum falls off when cool.

W. G. Titcomb, Providence, R. I.

Oxide of aluminum, or alumina, occurs naturally as corundum (Al_2O_3) the anhydrous oxide which is found only in small quantities, also as diaspors, gibbsite and bauxite, the hydrous oxides, of which bauxite is the only one found in commercial quantities. Pure alumina is also made as a by-product in the Goldstein Thermit process and has the trade name "Corubin."

"Corubin," is free from water, has a low coefficient of expansion and does not lose this latter characteristic when bonded with fire clay, according to Dr. Buchner of Mannheim. A vessel made of pure corubin can be heated to a red heat and cooled suddenly with water without cracking. It also has a high refractory value for coating brick and tubes exposed to high temperatures.

Bauxite, which is a hydrated oxide of aluminum, corresponding to the formula ($Al_2O_3 2H_2O$) is found in Georgia and Alabama in New Mexico, and in Arkansas, the latter State furnishing the greater part of the bauxite used at the present time in this country. It is highly refractory, fusing at electric furnace temperatures depending upon the purity of the variety used, as it contains silica, oxides of iron and titanium, in varying quantities.

It is basic and is unaffected by oxygen at all temperatures; is specially resistant to basic slags and oxides of the metals in fusion. It is now used for lining the hot zones of rotary portland cement kilns and the walls of lead refining furnaces, and has been tested and shown up very favorably in connection with basic open-hearth furnaces.

Sir Wm. Siemens found it a superior lining for iron and steel furnaces, lasting six times as long as the "Stourbridge first brick." Its application is in the experimental stage, and undoubtedly it will assume a place among the refractory materials used at the present time.

Magnesia or Oxide of Magnesium, familiarly called Magnesite, is obtained by calcining the mineral magnesite or magnesium carbonate which accurs in Austria, Greece, Norway, So. India, and in our own country in California. It is highly refractory when pure, but generally carries silica and iron as impurities. It fuses at electric furnace temperatures, depending on its purity.

In chemical activity it is basic and resists the action of basic corrosive slags, such as are encountered in the basic open hearth steel furnaces. For this reason, it is widely employed in furnaces of the above type. It also finds some use in rotary portland cement kilns. E. Kilburn Scott claims that "electrically shrunk crystallized magnesite" is "highly refractory" and can be used as a wash over fire brick to great advantage.

Pure magnesia tubes and crucibles are now manufactured by the Royal Porcelain Factory of Berlin. They are not only refractory, but can be heated suddenly in an air blast without danger of cracking and show no electrolysis when heated up to 1750 C. in an electric furnace, which is quite important.

Chromite or Chrome Ore is an oxide of Chromium (Cr_2O_3) and is very infusible, but is not extensively used. In chemical activity it is neutral and is used for separating basic and acid brick where they come together as in the walls of a basic-ope hearth furnace; for example, the hearth is lined with magnesite which is basic, and the crown and walls with silica brick, which are acid. Usually a course of chrome brick is layed between the two to avoid chemical action at high temperatures. The brick are bonded with fire clay and molded and burnt similar to fire brick.

Dolomite, which is a mixed carbonate of lime and magnesia ($MgCo_3CaCo_3$) is calcined and separated from its carbonic acid gas. It is manufactured into brick and in England is used quite extensively in the basic open hearth furnaces as its chemical action is basic, but it is not entirely satisfactory and is being replaced by magnesite.

Lime is very infusible, but is little used as a refractory on account of its difficult application. It can be applied as the byrate, afterwards heating it to drive off the water, but it must be kept constantly heated above 100 C. to keep it from hydrating again. It is quite soft and a poor abrasive although it is practically as good a heat insulator as fire brick. It is highly basic and is attacked by acid gases such as carbon dioxide (CO_2), sulphur dioxide (SO_2), chlorine, etc. So far its use has been very limited.

Silica is one of the commonest of the earth's minerals occurring in various forms, and still it is one of our best low grade refractories, fusing at about 3220° F. At high temperature it becomes an active acid and has great affinity for basic substances, attacking them readily. It is manufactured into brick from crushed gannister of quartz rock, as sand is not suitable, is then bonded with about 2% hydrated lime and moulded into brick and burnt in kilns like fire brick. When made, the brick analyze about 95 per cent. to 96 per cent. silica. They are used extensively in the crowns and walls of open hearth steel furnaces, in glass pot furnaces, copper furnaces and elsewhere.

Articles are now being produced from fused quartz which are highly refractory and are unattacked by acids. On account of their low coefficient of expansion these articles can readily be plunged into cold water while white hot without serious effects.

Fire Clay: The refractory clays comprise the plastic and flint fire clays, the kaolins and bill clays. The plastic and flint fire clays are very generally used, but the kaolins and ball clays are seldom employed as refractory materials principally because they are more valuable for other purposes.

The plastic and flint clays are used in combination and separately. Brick are made entirely from flint fire clays as well as with varying proportions of both flint and plastic clays. Occasionally plastic clays are mixed with coarse particles of quartz though this practice is generally declining.

The refractoriness of a fire clay depends on its silica-alumina ratio, on the nature and content of its fluxes, and on its fineness of grain. Of these the most important is undoubtedly the silica-alumina ratio: the lower the silica content and higher the alumina the more refractory will be the clay. With some few exceptions, it has been generally observed that brick that run over 65 per cent. silica are not refractory. (See paper on "Refractoriness of Some American Fire-brick," by R. F. Weber in Trans-American Institute of Mining Engineers.) The average range of the silica in refractory bricks is between 55 per cent. and 65 per cent. It has generally been observed that in refractory brick where the total content of fluxes is high the silica-alumina ratio is generally low, and that where the silica-alumina ratio is low the total content of fluxes may be high without seriously injuring its refractory qualities. However, the silica content of a brick, in which coarse quartz particles are added for a non-plastic, cannot be compared with the silica content of a fire clay brick where the only free silica there is, is what occurs naturally in the clay. In this case a rational analysis and an analysis of the clay forming the matrix of the brick is required to admit of any comparison. Indeed a great deal of the confusion that exists in comparisons of chemical anaylsis is due to the fact that no distinction is made between brickcarrying quartz particles as an addition and those containing free silica naturally. A highly aluminous matrix is an important feature as the matrix generally fuses first on account of its fineness. It is possible to produce a refractory brick using quartz as non-plastic provided a highly aluminous clay is used for the matrix and the quartz particles are sufficiently coarse.

The fusibility of fire clays varies widely. The most refractory clays fuse between Seger Cones 33 and 36, approximately 3254° to 3362° F. Others fuse anywhere between 3000° and 3250° F., while some of the low grade clays which, however, are not generally classed as fire clays, fuse between 2800° and 3000° F.

At the present time there are many different kinds of fire brick put upon the market. They vary greatly in quality, in physical and chemical compositions. The mechanical treatment the clay receives in manufacture tends to give it certain characteristics. For instance, grinding, mixing, aging, weathering, washing, semi-drying and repressing, hand-making and machine-making, burning, etc., all have their different effects on the product.

To intelligently produce a brick of certain qualities, we must find out what qualities are required in a brick for a certain purpose, and to do this we must turn our attention to the smelters and furnaces where they are to be used. In general we must familiarize ourselves with the chemical and physical conditions in these furnaces, such as the temperatures attained, the slags or fluxes, if any, that are to be encountered, the mechanical action such as abrasion, the action of gases oxidizing or reducing, the nature of the fuel, oil gas, coke of coal, and the manner in which it is used, the position and construction of the material in the furnace, whether it is required to stand compression, tensile or bending strains, etc.

Having a working knowledge of our furnaces, we now turn our attention to our materials and study the following points in connection with them.

1. Fusibility.
2. Chemical activity of the material at high temperatures, acid, basic or neutral. How acted upon by gases, slags, etc.
3. Thermal conductivity of the material at high temperatures.
4. Hardness, toughness and abrasive qualities.
5. Density and poroscity.
6. Specific heat.
7. Coefficient of expansion—ability to withstand changes of temperatures.
8. Strength of material at high temperatures.

Upon our knowledge of the above points depends our ability to prescribe suitable material for furnace operations.

Considering the above points in regard to their value in the application of the material, we have first:

Fusibility: There is perhaps more information on this point than on any of the others, nevertheless there is not an accurate, complete list of the fusing points of the various refractory materials, and especially are some of the higher grades neglected on this point. Fire brick are generally known approximately, but accurate melting points are rare.

The reason for this is because a satisfactory high temperature furnace for testing fusing points of refractory materials is hard to obtain. The Devile furnace is practicable for fusing fire clays, but hopes are generally centered in the electric furnace for high temperature work. So far nothing very practical has appeared on the market. The Heraens platinum and iridium electric resistance furnaces are very practical up to the points somewhat below the melting points of their respective metals, but for long and continuous heats the platinum wound furnace cannot be used above 1400° C., or some 380° C. below the melting point of platinum according to the Bureau of Standards at Washington. The Kryptol electric furnace has not come up to expectations in so far as the writer has been able to learn. For the measurements of temperature up to 1600° C., the thermo couple is the most practical, while for measurements of high temperatures the Wanner optical pyrometer gives satisfactory results.

When brick are set in the walls and are only exposed on one surface, the temperature of the furnace may be kept close to or even at times go beyond the fusing point of the brick without serious damage to the lining. On the other hand, if brick are constantly surrounded with heat as are the settings of gas benches, checker-work brick, etc., the extremes of temperature are more dangerous and the temperature must be better controlled and kept at a safe distance below the fusing point or serious results will ensue.

Chemical Activity: It is important to know the chemical activity of the brick, and this is known in a general way of most of the refractory materials. For instance, it is generally accepted that magnesite, bauxite, lime and dolomite are basic, silica brick, acid, and chrome and fire brick neutral, although fire brick may at times contain free silica and act as an acid and again may be practically free from it and approach pure silicate of alumina which is a basic silicate.

It does not necessarily follow that because an acid fails a basic one is needed. The writer knows of a case where both a silica and magnesite brick lasted one day while a fire brick lasted two weeks.

Thermal Conductivity: The importance of this constant of refractory material has generally been lost sight of, and it is only recently that any efforts have been directed toward an understanding of the heat conductivity of refractory products.

Roughly, we can classify refractories under two main divisions. First, material for conducting heat; second, material for insulating heat. Under the first head we have, for example, crucible melting, muffles, gas retorts, by-product coke ovens, etc. Here it is quite apparent that the better the heat conductivity of the material, the greater will be the economy of the operation. Under the second head, we have the linings for blast furnaces, smelters, lime kilns, rotary portland cement kilns, brick kilns, boilers, etc.; in general linings for protecting the metals used in the construction of the furnace. Here it is apparent that the better heat insulating qualities the brick possess the less the danger to the metal parts of the furnace, the less heat lost by conduction and radiation and the greater the economy of the operation. (For an abstract of above paper see paper on "Materials used in furnace construction," "Iron and Coal Trades Review" for July 21, 1905.) The results of some very interesting experiments on the determination of heat conductivities of many of our refractory materials carried on by Messrs. R. S. Hutton and J. R. Beard in the Physical Laboratories of the Manchester University were presented recently before the Faraday Society.

They also made tests of the relative value of different heat insulating materials at comparatively high temperatures, and these demonstrated that at high temperatures fire brick is the best heat insulator; that is, it has the lowest heat conductivity of any of our refractory materials. Infusorial earth and light calcined magnesia were still better non-conductors of heat than fire brick, but they cannot be used at high temperatures on account of their excessive shrinkage. It was suggested that they be used for jacketing materials on the outside of the furnace between the brick and the shell, and it seems reasonable to use them in this manner.

L. L. Stephenson, Birmingham, Ala.

At 100°C., at which temperature the thermal conductivities were determined, white Calais sand showed the highest heat conductivity, followed by carborundum, calcined and fused magnesia, retort graphite and fused quartz, down to lime and lastly fire brick, which showed the lowest heat conductivity of the refractory materials.

There still remains large room for study and investigation along this line; namely, to determine the difference in thermal conductivities for different kinds of fire brick and fire clay material, also to find out the conductivity at high temperatures under long and continuous heats comparable with gas bench and retort operations.

Although it is apparently absurd to use the same material for insulating and conducting heat as in the case of fire clay retorts, as long as fire clay is inexpensive and has plasticity and tensile strength in its favor, it is likely to be used for such purposes where other physical requirements are of still more importance than the thermal conductivity. On the other hand, in muffles built of brick and other cases where the construction is possible there is no reason why advantage should not be taken of our present knowledge of thermal conductivity and silica or magnesite brick be substituted for fire brick. The saving in fuel possibly would justify the increased expenditure for , materials, and certainly tests could be made along this line to establish whether they would or not.

Hardness: The hardness and toughness of refractory materials is important because it is closely allied with the abrasive qualities and in many cases fire brick must stand abrasion at high temperatures as in cupolas and blast furnaces. There are also places where heavy bars are used in clinkering, and if brick are too soft in such places portions chip off and are lost. Then again certain brick are used in operations where the degree of hardness is important, as in the hot zone of rotary portland cement kilns, if a brick is too hard it will not allow the cement coating to stick, and the covering of the brick with this coating insures a much longer service. Again if the brick are too soft, although the coating will stick it occasionally pulls off bringing portions of the brick with it.

Density and Poroscity: These are universe qualities. the greater the density the less the poroscity, and vica versa. One operation demands a dense product while another operation demands a porous one. When slags and fluxes are to be encountered a dense brick will outlast a porous one of the same quality and very often of a superior quality. Glass pot clay must burn dense at comparatively low temperature and nothing works beter than the fine grained washed clay or natural fine grained pot clay. Of course the density of the material depends upon the fluidity of the flux to be encountered. Some are viscous like blast furnaces and cupola iron slags. Others are liquid, watery slags like lead slags. If brick are too porous even molten metals like lead will not only be absorbed, but will find their way through the brick, pass down between the shell and the lining and coming up under the brick hearth underneath force it up and distort it as the writer can testify. Crucibles for assay work should be very dense, as the reliability of the assay depends on the lack of absorption of the metals.

L. E. Rodgers, Chicago, Ill.

In certain oil burning furnaces the oil is sprayed directly against the hot brick and an intense local heat arises from the combustion which takes place on the surface of the material. The result is that the brick are cut out like a "honey comb." A porous brick here will not answer as well as a dense brick because the oil penetrates it too readily. On the other hand a dense mud brick spawls off while a dry press brick seems to give the best satisfaction; in this case the writer believes a coating of carborundum over the surface of the fire clay material subjected to the spray of oil will greatly increase its durability.

For bung brick and brick at the ports of furnaces where preheated air and gas unite in combination, a porous coarse brick full of highly refractory grog stands the cutting action of the flames much better than a dense brick.

Specific Heat: A knowledge of the specific heats of our various refractory materials is valuable because of its importance in operations involving the absorption of heat by refractories, such as the brick work in blast furnace stoves, checker-work in regenerative flues, etc. In all examples such as the above the brick are used to absorb and collect heat from waste gases and deliver it in turn to the air passing over them. The specific heat of a substance is the exponent of its heat absorbing qualities.

We learn in physics, that the denser the body the lower the specific heat and the more porous the body the higher the specific heat; also that the specific heat is greater at high temperatures. Accordingly a porous brick would be more suitable for checker-work generally speaking. However, little investigation has been made along this line and we know comparatively nothing about the value of different materials for uses where heat absorption is an important factor.

Definite data concerning the coefficients of expansion of our refractory bodies would be very helpful to designers of furnaces as well as to metallurgists. At present our knowledge is limited to a few generally accepted facts. We know that as a rule dense bodies crack more easily than coarse porous bodies under unequal applications of heat, and for this reason coarse bodies are generally used to withstand sudden expansion and contraction. We have also learned that dry press brick do not spawl off like mud brick, but beyond a few facts similar to the above our information is scarce.

Opposed to the statement that dense bodies crack more easily than coarse ones, we have the fused refractories, quartz, alumina and magnesia, which are dense but have low coefficients of expansion and can withstand sudden changes of temperature without cracking. It would seem then that certain refractory oxides of the metals when pure and fused have low coefficients of expansion, and it is possible that the rule will apply to other refractory oxides.

The structural strength of the material at high temperatures is an important phase of the problem of application. Wherever possible the construction of the furnace is so designed that the refractory body is exempt from strains and undue weight, but in certain operations, for example, in gas benches, the settings are required to bear certain loads and must have sufficient strength at the temperatures of the operation to bear up the superstructure.

Some valuable work has been done along these lines by Mr. Lemon Parker of St. Louis and his method and results are available in Vol. VII of the transactions of the American Ceramic Society. It does not seem unreasonable to demand of the manufacturers of refractory materials that they guarantee the ability of their material to withstand certain loads at certain temperatures.

With a knowledge of the various qualities of our refractory materials as outlined above and a sufficient understanding of the requirements of the furnaces the correct application becomes a simple matter.

After everything has been done to secure proper material there still remains an important means of preserving it in certain types of furnaces. This is accomplished by cooling the metal plates on the outside of the furnaces with water. The loss of heat in this manner, which has been proved to be only some 5 per cent. of the total, is made up by the increased length of campaign of the furnace.

The old method of applying water for cooling was accomplished by means of water jackets and bosh plates, but the more recent procedure is to cool the steel or cast iron plates on the exterior of the furnaces with a spray of water, and this is not only equally as efficient but is cheaper and works better mechanically. As long as the film of water is kept on the surface of the metal the temperature cannot exceed 100° C., and accordingly it has the same effect as a large stream of water would have.

A recent application of this principle has been made at Geismar, in Germany, where there is a blast furnace cooled by a spray of water from top to bottom. It is lined with three inches of fire brick and has already endured a strenuous campaign of four years, and there is no reason apparently why it should not last for a much longer time.

In conclusion the wrier wishes to say in defense of the manufacturers of fire brick and other refractory material, that many of the difficulties and troubles that arise from time to time are not due to faulty materials, as very often defects in design and poor construction combined with an attempt to use inferior materials because of their lower cost are the causes of disaster.

Such things as turning arches out of square brick, using soft brick in flat arches, submitting tile to bending strains, etc., are responsible for many failures laid at the door of the manufacturers. Continuity of operation is the key to economy in most metallurgical processes, and only serviceable materials will fill the bill. The cost of repairs including loss of output often exceeds the cost of materials, so that it is only the best which are the cheapest in the long run.

When the consumers of refractory materials are educated up to the point where they will be willing to pay better prices for special materials adapted to their uses, then the manufacturers will gladly meet their demands. (Applause.)

President Copeland: The discussion of this excellent paper is now open, gentlemen:

Mr. Ittner: Of course I am not able to discuss this paper, but it is evident to my mind from its preparation and reading, that a great deal of thought and study has been applied to it, and because a member presents himself in person and reads his paper, there is no less a reason why we should not extend to him a vote of thanks and I have the pleasure of making a motion that we extend to Mr. Aubrey a vote of thanks for his excellent paper.

Mr. Klein seconded the motion which was carried.

Mr. Lemon Parker: I think as Mr. Aubrey has said the manufacturers of refractory materials do not pay enough attention to the heat conductivity of material and to the adaptibility of material to certain uses, but it receives more attention to-day than for a long time. I think this paper will awaken an interest and make the fire brick manufacturers see that they should pay more attention to details than heretofore.

Mr. H. S. Grimes: If there is no further discussion on this paper, I would like at this time to present the report of the Committee on Resolutions.

President Copeland: If there is no objection, we will hear from the Committee on Resolutions.

REPORT OF THE COMMITTEE ON RESOLUTION.

Mr. President and Gentlemen of the Convention:—

This the twentieth meeting of our Organization is about drawing to a close, and it is the desire of the retiring and the newly elected officers to extend to the members a very hearty thanks for the manner in which they have assisted in conducting this Convention. The Convention being one of the largest, if not the largest we have ever held, they also desire to congratulate one another upon the large increase, an addition of over one hundred new members being added at this meeting. Credit for this large increase is due to the untiring efforts of our Secretary.

This Convention will go down in history, we believe, as a memorable one, although with the increase in the manufacturing of bricks all over the United States, there is no question but that the Association will grow accordingly.

Your Committee on Resolutions desire to make special mention of the extra effort made on the part of Professor Edward Orton to interest the Convention in a statistical way, and we urge upon him to continue his investigations until they are, in his opinion, perfect.

RESOLUTIONS OF RESPECT IN MEMORY OF DECEASED MEMBERS.

We mourn today the death of one long identified with the brickmaking interests of the East, and an active and useful member and ex-officer of this Association, John E. Parry, of Boston.

Mr. Parry came of a brickmaking family, and together with his three brothers, devoted his entire business life to our ancient art, occupying from start to finish a place in the front rank.

He was also a leader in other walks of life, was a prominent Mason and an efficient public servant in his home city and as State Senator of Massachusetts, freely gave of his time and effort in the interests of the people.

He was essentially a man among men, filling every position he occupied with honor to himself and benefit to his fellow-men.

Those of us who knew Mr. Parry personally mourn his loss, not only for what he accomplished in the public and business world, but for his sterling character, fearless in the adherence to the principles of righteousness, a good neighbor, a true friend and a thoroughly honorable man, one of the few who took more delight in doing a kind act than in acquiring personal gain, and many a man has had occasion to feel grateful for his helping hand.

The world is certainly brighter today for the life of John E. Parry, and the same is true of each and every one of the following deceased members who have been called from labor to reward during the past year.

Ellis. P. Raymond, New York, N. Y.; Geo. J. M. Ashby, St. Louis, Mo.; A. G. Haven, Sangerfield, N. Y.; James W. Tester, Montreal, Can.; Isaac Hardy, Worksop, Eng.; Adam Schneider, Columbus, Ohio.

In the loss by death of the above named members of this organization, we have lost valuable friends and members who have always devoted their best efforts to the furtherment of this organization. It is with very sincere regret that it becomes necessary for us to chronicle these sad events. But God's will be done.

We extend to the families of the deceased the heartfelt sympathy of this organization, and a copy of the resolution will be forwarded to them.

RESOLUTIONS ON THE ENTERTAINMENT COMMITTEE.

Your Committee on Resolutions, on behalf of the Convention at large, desire to extend to the members of the Entertainment Committee, of Philadelphia, their very sincere and heartfelt thanks for the most gracious and excellent manner that they have been able to take care of this large body of ladies and gentlemen. The promises made when this Convention was urged to come to Philadelphia, have more than been fulfilled. The untiring efforts on the part of the committee in charge will always be a bright spot in the memory of each and every one of us. The pleasant acquaintances formed through them will be of lasting duration.

RESOLUTION OF THANKS.

Your Committee on Resolutions on behalf of the officers and members, desire to extend to the proprietors of the Continental Hotel, their thanks for the treatment received at their hands, while being under their charge. We especially extend our thanks to the proprietor and manager, Mr. Harry Maltby, for his carefulness in looking after the guests during the Convention; to the clerks in the office, in fact, to all the employes of the house, and we assure them all their little courtesies have been highly appreciated.

RESOLUTION FROM THE LADIES.

Your committee on Resolutions, on behalf of the ladies, wives, mothers, sisters and sweethearts of the members of the organization, desire to return sincere thanks to all of those who took part in so highly entertaining them. They desire to extend especially their thanks to the ladies who so largely added to the entertainment of their visiting sisters. The ladies desire us to say that their visit to Philadelphia will be one of the bright spots to be cherished in their memory, and they shall long remember the very pleasant time that the Philadelphia Ladies' Committee have given them.

RESOLUTION ENDORSING THE ACTION OF PRESIDENT THEODORE ROOSEVELT IN HIS EFFORTS TO SECURE BETTER RAILROAD RATE LEGISLATION.

Be it Resolved, By the National Brick Manufacturers' Association, assembled at Philadelphia, this eighth day of February, that we heartily endorse the President, Theodore Roosevelt, in his effort to obtain, through Congress, now assembled, means and ways whereby such legislature shall be enacted so that the Inter-State Commerce Commission or other commissions that may be appointed, shall have power to so regulate railroad rates that there will be less discrimination than now exists.

E. C. Miller, Ft. Wayne, Ind.

RESOLUTION FAVORING MUNICIPAL TRADE SCHOOLS.

Whereas, We have learned with much satisfaction that the Board of Education of the City of Philadelphia are contemplating the establishment of "Mechanical Trades Schools."

Therefore be it Resolved, That we, the National Brick Manufacturers' Association in convention, assembled, do most heartily endorse the effort of introducing into the Public School System, not only of Philadelphia, but in all cities of our country, schools in which the hand as well as the head can be educated with a view to produce self-supporting citizens and useful members of the community in which they reside.

H. S. Grimes, Ohio.
E. C. Miller, Indiana.
J. P. Cahoon, Utah.
S. G. Guignard, South Carolina.
F Talbot, Missouri.
L. E. Rodgers, Illinois.
E. A. Wickham, Iowa.
Committee.

I move the resolutions be adopted as read.

Motion seconded by Mr. Ittner and carried.

President Copeland: We will again take up the regular program.

Secretary Randall: The next in order is a paper by W. C. Mitchell, of Edwardsville, Ill., on "Application of Heat and Removing Vapor from Various Clay Wares." Mr. Mitchell went to Cuba sometime ago but fully expected to be here to read his paper. He has not come however, and I will ask Mr. Albert Klein to read this paper for us.

APPLICATION OF HEAT TO VARIOUS CLAY WARES.

By W. C. Mitchell.

Mr. President and Gentlemen :—

When requested by your most inestimable Secretary, Mr. Theo. Randall, for a paper to be read before this convention, I at first thought I would decline the most honorable undertaking, but after being informed that I would have about six months to dream and ponder over whatever subject I might desire to select, I concluded to comply with his request, and therefore selected the above subject. I may not be able to enlighten some of the members of this association to any great extent, as I do not claim to be an infallible know all, I will simply speak on what I know from practical experience to be facts.

The drying of brick and kindred clay products is perhaps one of the most important parts pertaining to their manufacture.

There are innumerable methods adopted by clay manufacturers for removing the moisture from their products, and as brick is one of the most staple articles manufactured in this country today, I will endeavor to talk principally on brick dryers.

There are a great many different artificial dryers on the market, some of which are protected by patents and others which are not.

W. C. Mitchell, Edwardsville, Ill.

Most all of these various drying systems have more or less good points and in most cases will perform the duties for which they were intended remarkably well.

Having had considerable experience with various types of dryers, I never came in contact with any system that would not perform that work for which it was intended, if installed in the proper manner, and maintained as it should be, but on the other hand, I have seen a number of dryers which were very expensive to install and also expensive to maintain as well as operate. I have also come in contact with a number of firms who would condemn their dryers simply because they were unable to dry about fifty per cent. more brick per day than they actually had drying capacity for.

In my opinion, I do not think it is possible for any individual or firm, to lay down a fixed rule pertaining to the drying capacity of a dryer which is applicable to all clays and conditions. Some clays in certain localities, and under certain conditions can be dried in from twelve to eighteen hours, while others require from twenty-four to sixty hours to dry thoroughly, the exact time can only be determined by actual tests. I came in contact with a certain firm a few years ago who had installed a well known dryer, which was guaranteed to dry 30,000 soft mud brick per day. After being put in operation it was found that the dryer in reality would dry about 60,000 bricks per day, and it was necessary to cut off one-half the dryer tunnels and also sell one-half of the rack cars. Had the dryer firm known positively, that this particular clay could have been dried in half the time, they, no doubt, would have been several thousand dollars ahead of the deal, and would have been generous enough to give their customer a good box of Havanas. On the other hand, had the clay required double the tunnel and car capacity, they would have been several hundred dollars out of pocket and also gained the ill-will of their customer.

The above case is of very rare occurrence as this is the only one which ever came under my personal observation. In most instances the drying capacity of the dryer is under estimated, on account of close competition, and the dryer firm being eager to land the sale. The day is not far distant when the matter of determining the time required to remove the moisture from various clays can be determined definitely in our ceramic institutions in a scientific and analytical manner, which will mean thousands of dollars saved to both our brick and dryer manufacturers and no doubt most of our larger firms will have private laboratories of their own in charge of some graduated ceramic student who, in a short time, can solve the difficult problems which the clay manufacturer invariably comes in daily contact with and which frequently require months, and even years to solve under our present crude methods. The most popular, and I believe the most up-to-date and inexpensive drying system to install and operate, is what is known as the waste heat system.

This system in most instances can be installed at a very reasonable cost, and is also very economical to maintain and operate. There are very few brick plants in this country of any size but which have an abundance of waste heat which can be obtained from either the cooling kilns or the exhaust from the engines, either one or both can be utilized in drying all the brick that they may make.

In order to obtain the best possible results with a waste heat dryer, there are several things to be taken into consideration; namely :

1st. The amount of waste heat available at all times, both from the cooling kilns and also the engines.

2nd. The location of your plant as to drainage, etc.

3rd. The size, class and number of kilns, and their situation relative to the drying tunnels.

4th. The size of fans required.

5th. The size of both suction and discharge tunnels.

6th. The arrangement of drying tunnels and the proper method to install the fan and speed same should run.

I will endeavor to explain the above in detail. Where down-draft kilns are used and the kilns are built in proportion to the capacity of the plant, I will say that any plant which has a capacity of 25,000 brick per day, or over, will always have an available cooling kiln to draw the waist heat from at all times while in constant operation. This, in itself, should be sufficient to furnish all the heat required without the necessity of utilizing the exhaust steam but in cases where up-draft kilns are used, which usually hold from 300,000 to 500,000 brick and the capacity of the machine is only 25 to 30,000 brick per day, it would be necessary to have some other source of obtaining heat and for such plants it would be necessary to have in connection with the waste heat from kilns steam coils for utilizing the exhaust from engines and also an auxiliary furnace to take direct heat from. In estimating the amount of heat required at all times it is first necessary to find out the exact amount of moisture your brick contains when they come from the machine and which has to be removed in given time. The following data will give a satisfactory basis to estimate the amount of steam coils and the size furnace, etc., required. One pound of ordinary bituminous coal will furnish about 13,000 heat units. One square foot of grate surface will consume from 15 to 20 pounds of bituminous coal per hour. Three pounds of coal will generate 25 pounds of steam per hour which is equivalent to 1 H. P. or 100 lineal feet of heater and 3 lineal feet of 1 in. pipe will give off 5 heat units per minute and heat about 300 cubic feet of air 1 degree F.

Air at 32° F. contains 1-160 of its weight in water when saturated with moisture and doubles capacity for saturation for every 27° F. increase and it requires 3,500 cubic feet of air to absorb 1 pound of water at 32° F., or 40 feet of cubic air at 160° F.

Another very important factor to consider in installing a waste heat system is the yard drainage. Plants which are located in low, marshy places have to be very careful should they install underground flue system to see that no water gets into the tunnels as this will retard the drying facilities. In such localities I prefer the overhead pipe system as to the relative situation of the kilns to the drying tunnels. Will say that where the situation will permit, it is preferable for many reasons to have the distance between drying tunnels and kilns as near equal as possible and also as close to dry houses as possible. The size fan required depends entirely on the number of drying tunnels and the distance the heat has to be drawn.

The size of both suction and discharge tunnels are very essential features in the practical and economical operation of waist heat fans and should be proportioned according to the size fan used and the length of both the suction and discharge tunnels. For tunnels over 50 feet in length, 10 per cent. in area should be added for every additional 20 feet. The main discharge tunnel should be equal in area to the main suction tunnel and the distributing flues which distribute the heat underneath the cars of brick should have a combined area equal to at least the area of the main discharge tunnel and the hot air vents or outlets in distributing flues should have a combined area of about 5 per cent. less than the combined area of the distributing flues. This, in itself, will insure a uniform and equal distribution of heat in the various drying tunnels at all times. Should the combined area of the hot air vents or outlet exceed the area of the distributing flues there will at times be an unequal distribution of heat in the drying tunnels. One of the most important features pertaining to a waste heat dryer is the proper arrangement of the fan relative to the various flues, etc. I have often come in contact with waste heat drying systems where the fan was placed on a line with the exit end of drying tunnels and was sitting parallel with the drying tunnels themselves which necessitated the large discharge tunnel being located on the outside of the drying tunnels themselves directly under the cooling track of the dryer and running at right angles to the fan. This mode of construction is by no means the most satisfactory.

I recently had the experience of changing a large 12 track waste heat dryer which was built as just described and turned the fan facing the drying tunnels and placed the large discharge tunnel directly underneath the exit end of drying tunnels so that the fan in discharging the hot air had a direct and continuous passage leading from it direct to the distributing flues which were built at right angles to the main discharge or supply flues. This method of course eliminates the curve in main discharge tunnel, decreases the friction and brings the heat in more direct contact with the brick or ware to be dried and also receives the full benefit of every unit of heat radiated from the main discharge tunnel, which increased the drying capacity of dryer about 25 per cent. and also gave a more equal distribution of heat in drying tunnel. I strongly advocate drying all classes of brick thoroughly. I have frequently heard dry pressed brick manufacturers ridicule the idea of running their brick through tunnel dryers before setting them in kilns. There may be instances where this would not be practical but in 99 cases out of 100 dry pressed brick can be dried much more economical and with less danger of checking them when dried in artificial dryers. I have run dry pressed brick through dryers which were heated up to a temperature of over 200 F. in 24 hours drying them thoroughly without checking them a particle, after which they were set in kilns and heated up to a dull red heat within 48 hours after kiln was fired up not damaging them in the least. This same clay made into dry pressed brick and set in the kilns direct from machine required from 7 to 8 days to thoroughly water smoke or dry them, without checking them.

This meant a saving of 25 per cent. in fuel and about 50 per cent. of time in burning. I do not think the time is far distant when the majority of dry pressed brick manufacturers will adopt artificial dryers for drying their dry pressed brick before setting same in kilns.

In conclusion will say in installing a waste heat drying system avoid as many right angle curves as possible and eliminate all complicated features and get drying tunnels as near source of supply as is consistent with the arrangement of our plant. (Applause.)

President Copeland: I would ask Mr. Stephenson of Birmingham, Ala., to lead in the discussion of this paper. We were all interested last year in hearing about his dryer, and if he is in the room we would like to hear from him. I guess he has made his escape. I am going to ask Vice-President Conway to occupy the chair for a short time.

Vice-President Conway: The Secretary will kindly announce the next paper.

Secretary Randall: The next is a paper, "The Biography of Clays," by Ross C. Purdy, of Champaign, Ill. What has detained our friend Purdy I do not know, but am afraid it is something serious, for it would take something serious to keep him away from the convention. He writes under date of Feb. 5th, "I enclose my paper. It required recasting and almost entire rewriting, owing to the presentation of Prof. Fox's paper at the Illinois Clayworker's Convention. I regret that I will not be able to present it personally." This paper is very lengthy but is very interesting, and I am going to suggest that it be considered read and published with the other papers. It is a valuable contribution to our literature.

BIOGRAPHY OF CLAYS.

By Ross C. Purdy, Champaign, Ill.

Mr. President and Gentlemen of the Convention:—

The history of a particular deposit of clay or a citation of ALL of the agencies that have affected its chemical and physical character, is almost an impossibility. Many theories and speculations have been entertained by scientists, all of which may come to naught by the discoveries of new facts. Our sciences being still in the formative stages; revolutions and evolutions in the field of pure science are still with us; yet there are known facts concerning nature and there is convincing circumstantial evidence from which deductions can be drawn that have every earmark of being true when viewed in the lime light of our highly developed sciences. The great difficulty in studying the agencies and their effect on the rocks, clays and soils, is that we can not observe accurately the processes as they are operating. But as Seger says, "Even if nature does not grant to the human eye a look into her most secret workshops, if she does not show how she changes clay into shale, sand into sandstone, or wacke, or forms a crystalline lime or marble out of the deposit of calcareous shells, if she has not yet, up to this time, permitted us to determine the conditions under which, in heaps of detritus formed by friction and weathering, the like constituents move to certain centers of concentration and become new crystalline formations, speculative science, by comparison of the products upon which these unknown influences have worked for an unlike duration of time, or with unequal intensity, yet furnishes a hold as to how these may have originated and bring us closer to the workshop of nature, for the most part not accessible for direct observation."

One of the greatest factors making difficult the study of the efficiency of forces operating in nature, is time. In the laboratory, the longest duration of time in which observations of the physical and chemical changes taking place when substances are undergoing changes is an almost "infinitely small fraction of the time through which the forces or agents have been at work." To illustrate, Van Hise says that "in the chemical laboratory, the amount of crystalline silica which can be dissolved in water and transported to another place within the time during which an ordinary experiment is carried on, is so small as to be immeasurable, and yet it is certain that in nature, water has dissolved and transported to other places enormous quantities of silica."

R. C. Purdy, Champaign, Ill.

However, there are known agencies at work in nature, the cause and effect of which we are, in the main, familiar. We know something of the factors that tend to shape the character, disposition and capacity of a human being, but the problem that is the more difficult is to study a human being and determine what forces have made him what he is. In an analogous way, the same can be said of clays. While we can enumerate the several factors causing alterations and modifications in the chemical and physical properties of a clay, it is not so simple a matter to study the physical and chemical properties and then determine the factors which have affected these properties; so let me repeat the introductory sentence; the history of a particular deposit of clay or a citation of ALL the agencies that have affected its chemical and physicial character is almost an impossibility.

FORCES AT WORK.

Wind, water, ice, and changes of temperature: These agents are so effectual and operate within such a limited space of time that they can be observed and measured with a tolerable degree of accuracy. They are too well known to warrant extensive elaboration at this time. Animal life from the earth worm to the large burrowing animals throughout all parts of the earth is constantly working over the soil, assisting, as it were, the work of the elements, water, wind and ice, and the changes of temperature. Vegetation, from the mosses to the trees, affect very materially the opportunities for running waters, blowing winds, moving ice and changing temperatures to carry on their work of alteration by promoting, transporting and exposing new surfaces. Denuding of forests, sinking of artesian wells, cultivation and drainage of soils, changing of water courses and opening of canals all play their part in influencing this work. The transportation, denudation and deposition of materials by which water and ice and their consequent effects will be touched upon latter, when considering the types of clays as we find them in nature.

Chemical Agencies: The abstraction of inorganic materials from the soils by plant life is an important factor. The materials most abundantly abstracted, according to S. W. Johnson, are potash, soda, magnesia, lime, phosphoric acid and silica.

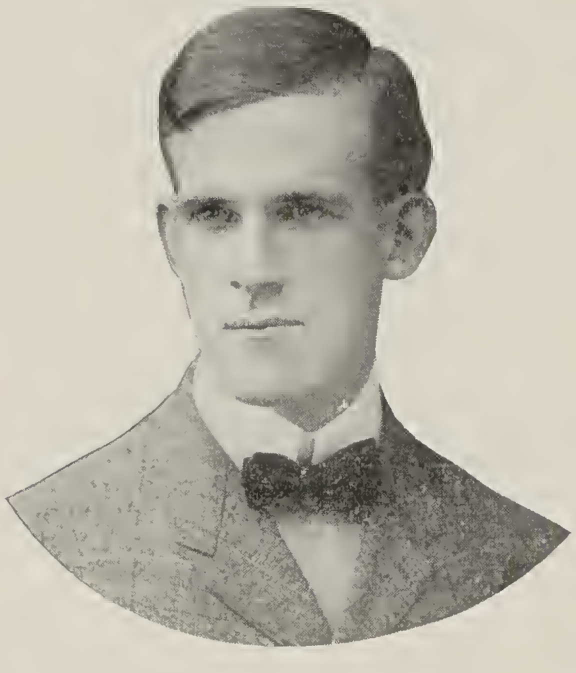
In grain and straw, Johnson found the following:

	Grain.	Straw.
Potash	18.50	12.0
Soda	3.90	4.6
Magnesia	7.00	3.0
Lime	2.70	7.3
Phosphoric Acid	32.40	6.0
Silica	31.10	59.7

Johnson further affirms that plant life is capable of disintegrating feldspar, converting it into clay and the carbonate of potash. It is even stated that plant life frequently cuts great furrows in the more soluble rocks, such as limestones, by virtue of the acid reactions at point of contact of the roots with the rocks.

F. H. Storer has proven by experiments that owing to the chemical action of plant life, the soil and clay is made more soluble.

Action of bacteria in clays has received considerable attention from the potters and justly so, for they play an important part in the oxidation process of vegetable rot in clays. They are the main organic agents in the process of oxidation of dead plants and animals. Oxidation by water and oxygen alone, it is claimed by Van Hise, would be very slow were it not for bacteria. They accelerate the oxidation of carbon and with the aid of water, convert it into carbonic acid; they act upon the plants converting their nitrogen into nitrous and nitric acids and ammonia; the effects of which will be considered later. In fact, bacteria are potent in the oxidation and reduction processes that so alter the admixed ingredients of our clays that they deserve the prominent consideration they are receiving in our scientific researches on clay.



John McAvoy, Philadelphia, Pa.

Excreta of animals consists in a large part of chemical compounds that promote chemical changes. The passage of soil through the alimentary canal of an earth worm, decomposing the material matter is a factor too little appreciated.

Humic acid plays an important part in the chemical changes occuring daily within our soils. Humis is the end result of the action of bacteria; water and oxygen on organic compounds. The main effect of humic acid is to convert silicates into carbonates and by its own breaking down, producing carbon dioxide. It has also the property of holding water heat, ammonia, acids and soluble compounds, all of which promote chemical activity.

Richard Mueller, an eminent German chemist, experimented on the effect of carbonic acid on the various silicates and succeeded in showing that almost all of the silicate minerals were susceptible to the destructive action of carbonic acid. In the process of carbonation, sodium, potassium, calcium, magnesium, and iron that were originally combined as insoluble silicates, were converted into the soluble carbonate compounds, and the alumina made soluble, and the silica partly soluble. The alkaline carbonates thus formed are able, in turn, to decompose other silicates under ordinary conditions of weather, thus making complete the cycle of carbonation, oxidation, vegetation and further production of carbonates, for it is in limy soils that vegetation best flourishes, except where the alkali carbonate accumulates, however, there vegetation is killed and the cycle interrupted.

Iron compounds, especially the oxides, hydrate readily in wet weather. Granitic rocks have been known to crumble due to hydration of its component parts. On hydration, or in other words, the taking of water into chemical combination, the mineral expands, exerting a powerful shattering force that crumbles the rock and causes it to slack down to powder. The breaking down of concretions or "nigger heads" thrown out from shale banks, illustrates the destructive force attendant upon hydration of iron and lime.

Dehydration is the reverse of hydration. Its effect is merely to change the color of the clay and make easier the oxidation of the fluxes.

All natural compounds are to some extent soluble in water.

Dr. M. Fiebekarn gives the following citations of experiments conducted to show the solvent powers of water. C. Dolton found anorthite, treated in form of floated powder, with distilled water several weeks at 80° C., was dissolved.

E. W. Hoffman found similar solubility for Talc, potash mica, magnesia mica, etc.

Danbree found that by treating potash feldspar in a rotating drum, the water contained notable quantities of potash and silica.

The solvent power of water is greatly supplemented by organic substances like humic acid as well as by carbonic, nitric, sulphuric and hydrochloric acids and their compounds. For instance, 10,000 parts of pure water dissolves only 0.13 parts of carbonate of lime, while the same amount of carbonate water will dissolve 10.0 parts, or seventy-six times as much carbonate of lime.

Chemists would say that this increased solvency is the result of mass action and that the solvent action is proportional to the effective mass. By this they mean that an exchange of component parts by the inter-reaction of the substances takes place between the salts in solution, until all are satisfied and are in their most staple condition.

Van Hise says that if all the important basis occurring in the rock making minerals were equally abundant, the stronger bases would be taken into solution to a larger extent than the weaker bases. Therefore the order of solution, and this is confirmed analytically, would be potash, soda, lime, magnesia, iron and alumina.

T. M. Read calculates that throughout the entire globe there is removed about 96 tons of material per square mile, so it is readily seen that the solvent of water is a powerful factor in bringing about changes in the clays. Particularly is this true in limestone regions where the limestone skeleton of the rock formation is dissolved away, leaving as a residue some of our most valuable clays.

Deposition of the dissolved salts follow as a natural sequence, but deposition is generally the result of change of condition such as supersaturation due to evaporation of a part of the dissolving medium, or the action of life upon the dissolved material as in the seas, etc.

By virtue of the solvent power of water, oxides of silica, iron and alumina, the carbonates of lime, magnesia and iron, the silicates both hydrous and anhydrous, sulphides, particularly those of iron, are carried from the upper to the lower strata of our earth's crust making possible the formation of new rocks.

The cycle of rock disintegration, dissolved substances, precipitated compounds and rock formation is continuous. This cycle is made possible by the selective tendency of like materials to segregate and crystalize. To the recrystalization of material that was once in solution is credited our gneiss, schists, many of our slates and sedimentary rocks of all description.

Mechanical action of heat and pressuure metamorphose shales into slates and eject new rock forming substances from the interior of the earth into crevices and faults which in time pass through the cycle of decomposition, clay formation and remetamorphosing into new rocks. Nature seems to operate in cycles and there is no doubt, judging from the depression of a part and the uplifting of another part of the Atlantic coast that this earth will experience serious revolutions in its makeup in the next geological age.

THE CLAYS.

Having considered the agencies or forces at work altering the rocks and clays, we will now trace the probable history of the several types of clays. In this I am going to follow the general outline of Prof. Orton, Jr's. classification of clays, modified to some extent.

Kaolin: When a rock is broken down by any of the agencies or combination of agencies the end product of interest to clayworkers is the resultant clay. From minerals in the rocks that are free from iron we obtain directly the pure clay called kaolin or china clay. From minerals containing iron we obtain impure kaoline. The impurities in these clays may be leached out by the solvent action of water, assisted chemically by some of the many chemical agencies before alluded to, leaving as a residue a pure, white burning clay. Whether or not this has been the history of many of our kaolin beds is unknown. Many of the kaolin beds, however, are so situated as to make the leaching effect of water as a purifying agent intenable. For instance, the kaolin beds of Cornwall, England, are said to be far below the effective region of surface waters and that evidences are noted that the decomposition of the parent rock is the result of the action of flourine.

Pure clays may also be derived from the weathering of volcanic ash or fused materials known as erupted rocks that have been forced through fissures in the earth's crust.

Whatever is the history or impurity of the original clay formed in situ., i. e., its place of formation, its physical characteristic is lack of plasticity. By geological agencies, this non-plastic clay is removed from its place of formation to other beds, seldom to find a permanent resting place, but for ages it may be sorted, contaminated, purified, and redeposited, first under one condition, and then under another, until at last they are today in a more or less plastic condition, laid down in beds where from its developed physical and chemical properties it is known as ball, fire, bog, alluvial, shale, and bolder clay, etc.

Ball Clay: "Ball clay" is a commercial term used to designate the purer plastic clays. It can not be classified as ball clay by its purity altogether, for there are some fire clays that are just as pure, but which are differentiated from ball clays by their manner of formation and color when burned.

If in the working over, by geological agencies, the pure kaolin escapes contamination or its contaminating substances are such as can be leached out by percolating waters, and the clay in this process acquires plasticity, we have as a result a ball clay. If the impurities are mineral detritus alone such as is found in the Florida and Missouri ball clays, they can be purified commercially by washing and sedimentation. A few of our ball clays are thus prepared for the market. A few ball clays, such as the English, Kentucky and Tennessee ball clays, are found to be sufficiently free from contamination to be used direct from the mine.

Should the original kaolin with its contaminating substances be deposited in swampy districts as was the largest part of our country before the recession of the ocean to its present bed, then the clay will be rendered more impure by infiltration from the higher lands, by water, and in turn, purified by the heavy swamp vegetation, by virtue of processes before cited. By the time that the geological conditions are favorable to the metamorphosing of the vegetable deposits that have been preserved from decaying from the fact that the water and mud in which they fell prevented the oxygen in the air to come in contact with them, this deposit will be purified to a greater or less extent. Or this purification may be affected later by the leaching effect of water when this deposit is raised from the swamp level, to high ground as was the case with the coal measures at the time of the recession of the oceans. To the degree of purification by the agencies of plant life or perculating waters, or both, we have our different grades of fire clays, ranging from very impure, known as "bastard" or "No. 2," to purest or "No. 1" fire clay.

Now under some conditions this fire clay may be left plastic and under others nonplastic. As a case in question, may be mentioned the flint fire clays. The cause of this latter differentiation is unknown. Chemical analysis fails to reveal the secret. By hypothesis we can claim that the clay had never been rendered plastic since its formation, by the weathering of the parent rock. Or we can claim it has been indurated by infiltration and adsorption of cementing substances such as soluble silica. All clays have revealed the property to absorb soluble salts and if by pressure or long contact the absorbed substances should become chemically combined with the clay in part or in whole, or rendered insoluble, these soluble salts would not be leached out again, but remain as a cementing material. There are evidences in favor of either hypothesis.

Flint fire clay, according to Wheeler, is found in Missouri, in sink holes in milestone, the underground outlet of which had been choked. In these instances, the clay has probably not been purified by the leaching of plants or water, but rather are more liable to be in the same condition of purity or impurity, as when deposited.

Shales: Instead of finding a permanent resting place, some of the materials that might have been ball clays or fire clays, have continued their migration by means of streams, being continually sorted and contaminated until finally the finer grained portions were deposited in still, deep waters. If not altered, they would remain as mud or marks but due to being elevated by some movement of the earth's crust, and by steady pressure exerted upon the deposit, squeezing out the water, the particles of the mud would be brought so close together as to come within the limits of molecular attraction. This process of welding clay particles together by pressure is practiced daily in the manufacture of clay wares. That this is a possibility we know and it is safe to suppose that that is the history of the hardening process by which this fine grained mud was altered into the hard shale.

Chemical alteration of the mineral detritus or realteration of the compounds as well as the infiltration of some cementing constituents which were previously in solution in the swamp waters, may have taken part in the consolidation of the mud into shale. But for the most part, it is fair to assume that compression brought about by some movement of the earth's crust was the main cause of this change. That dehydration and its consequent hardening effect may have taken place after deposition of the shale material is a very great possibility as evidenced by the fact that there are transitions in such depositions from the very soft plastic shale on the one hand, to the hard nonplactic slate on the other, with an accompanying decrease in amount of water of hydration. By this process of hydration and dehydration in shale deposits the kaolin or clay substances may be altered. We have no means at present ascertaining the truth of this conjecture, yet its possibilities can not be questioned. If it is true, this might explain in part the peculiar properties of the shales that adapts them to paving brick manufacturers, such conjectures are justified by what we know of the composition of shales, and in time we will know more exactly the relations between the amount and character of alterations to the physical properties of the shale products as developed in the manufacturing processes. It within the province of the geological chemist to disclose to us these conditions and determine what these properties are that make a shale valuable.

Shales have been formed in nearly all of the geological eras and there is no known reason why they are not all equally adapted to paving brick manufacture. It may be that the newer, or coal measure shales are composed of material that have been worked over and over for a longer period of time and have thus acquired physical properties that make the shales better adapted to paving brick manufacture. This is another problem for solution by the geological chemist.

W. W. Winslow, Indianapolis.

Varieties of Shales: According to their mineral character, Prof. Orten has classified shales into clay shales, sandy shales, calcareous shales ferrugenous, and bituminous shales.

Owing to the fact that the shale material was deposited from running water it can be readily seen that a great variation in its mineral character is highly possible. That this is true even in the same deposit is to be seen at every shale bank.

One of my pupils once said "that an alluvial clay was a shale yet unborn." Poetic or ridiculous as this definition may be, it is emphatic in that the shale material differs from the ordinary alluvial deposits only by its fineness of grain, method of deposition and, later, induration.

Bog Clays: Bog clays are collected in still, shallow waters and marshes. Should vegetation thrive and their remains accumulate inoxidized, or in other words, be preserved, and the whole deposit be raised so as to ultimately be drained, we might have the impure bog clays converted into the purer fire clays. Bog clays suffer contamination from infiltration and want of drainage, altering its character and adaptability for manufacturing purposes very greatly. Bog clays are, as a rule, of very little economic value.

Glacial Clays: The study of glacial action and the glacial debris left after their recession is too profound to warrant more than a passing comment at this time. To the glaciers we credit the heterogeneous sheet of debris covering our Northern Middle West, making the rich soils of the prairie lands, leaving the limy and gravelly deposits here, and the fine silt or loam there. This debris varies in characters as the parent rock or soil over which, and through which the glacier plowed its way from the North. From glacial deposits we obtain material that is extremely fine grained, such as that of the Albany slip, so valuable as a stoneware glaze, up to the worthless gravel deposits known as boulder clays. Where by subsequent sorting and redeposition by running water, glacial material has been worked over, we have a material that is often of great economic value.

Alluvial Clays: As has been indicated in several places in the foregoing discussion, water is an extensive sorting agent, depositing in succession, from the head of the stream to its mouth and even out into the ocean, debris ranging from boulders to the finest of silts. Along a river course in eddies and places where the force of the stream may be arrested, there the finer particles may be deposited. Many of these deposits are valuable for clayworking purposes.

Loess: The discussion of the origin of loess calls out a great diversity of opinion. The sandy granular surface clays of the Mississippi Valley is in many places loess. Whether it is wind blown or water deposited is a very much mooted question. The sharp angular character of the grains and the lack of definite stratifcation has led many to favor the "wind blown" theory. Those favoring the "water deposition" theory argue that much of the glacial debris was ground very fine by mechanical action of scouring, so fine in fact, that the material will float in water for a long period of time, and so fine as to render attrition or further commutation impossible, thus the angular conditions of the loess particles.

Whether wind blown or deposited from water, we have in loess the valuable clay that lends itself so advantageously to the dry press process of brick manufacture.

In conclusion, let it be stated that the history of any of these clays could have been otherwise, and likely the most diversified clays, as we now find them, had the same origin. They shade one into the other so nicely that only the more pronounced types can be determined, and it is not infrequent that a clear identification of a given clay is possible. Geological, chemical and organic agencies have all played a large part in giving the separate clays their characteristic properties and time in which these agencies operate is so long and slow that their work may be arrested in all stages of completion. The general tendency is, however, to complete a cycle from one condition to another depending upon local circumstances for the rapidity of the completion of the cycle. The biography of clays, as has been before suggested in the introductory remarks, can not be recorded in its completeness, but the relationship between all types of clays can be traced as has been attempted in this paper. (Applause.)

M. W. Blair, Chicago.

Mr. Albert Klein: I move that a vote of thanks be extended Mr. Purdy for this paper.

Motion seconded and carried.

Vice-President Conway: This brings us to number 17, "Economy of Increased Production," by M. W. Blair, of Chicago. Mr. Blair is present and will read his paper. I am pleased to introduce Mr. Blair to the convention, he is the son of our Mr. W. P. Blair, of Terre Haute. (Applause.)

M. W. Blair, Chicago, Ill.: There is a little story of a woman who lived, I believe, in Chicago. She died, as unfortunately we all have to do, and as she had not been the best woman in the world she went to the lower regions for the balance of time. But she constantly prayed that her term might be shortened, and finally after continued prayer along this line, she was asked if she had ever done any charitable act which might offer her redemption. After considerable thought, she said, "Yes,, I once gave a poor individual a carrot." She was told if that carrot was strong enough to pull her out of her predicament she would be given an opportunity. So the carrot was handed down and she took hold of it and the carrot was pulled up and she was gradually being pulled out of Purgatory. The other people seeing her disappear, began to hang on to her skirts and to drag her back. She looked down and saw dozens of lost souls hanging to her skirts and fearing that the carrot would break with the weight of the added burden, she kicked out and said, "Get off, this is my carrot." Immediately the carrot broke and she fell back. Now it has not been the spirit of this convention to say "this is my carrot," and I do not believe any information ever given before the convention has ever been given in the spirit that "this is my carrot."

ECONOMY OF INCREASED PRODUCTION—A DISCUSSION OF THE TWO MACHINE YARDS.

By M. W. Blair, Chicago.

Mr. President and Gentlemen of the Convention:—

The cost per unit is determined by the amount of goods produced for a given expenditure, hence the question of economy in insallation, operation and maintenance are important to a plant's success. Increased production for the same expense has been attempted in various ways and the increasing demands of labor are a constant reminder that one must make more brick per man or shut down the yard. Increased output was first accomplished by simply speeding up the machine. The hand cut-off, however, hindered progress and was discarded for the automatic. Then the cast iron gearing of the machine began to lose a tooth occasionally, due to the increased speed. Cast iron gears are still used, but chiefly in plants where an even break is considered a good year's business. Cut steel gears are expensive but a machine so equipped has a capacity so far beyond any of the cutting tables on the market that the limit to capacity is back on the cutter and likely to stay there for some time.

I do not consider lack of kiln capacity, for if the machinery were able to produce the goods the kiln or kiln shed would be built even if it were necessary to borrow the money.

The limit of any style cutter at present is 500 brick per minute. This speed has only been attained by careful adjustment, and years of patient improvement, and is maintained by but one or two individual machines in the country; 200 per minute is regarded in the larger plants as satisfactory, while probably nine tenths of the yards in the country do not average 100 per minute. There are now cutters under construction, however, which are expected to pass the 500 mark; but, while awaiting their development, our cities must have brick; New York using about 2500 million and Chicago over 1500 million per year, with other cities in like proportion to their population. They must be cheap brick and they must be made at a profit. Cheap to the consumer to compete with a growing craze for concrete and sand-lime and cheaply produced to keep the business on a par with other lines, for while lumber and steel have advanced with increased labor, it seems that a brick is a brick and any increase in price is an unrealized dream. Economical production on a large scale therefore seems to be the salvation of the brickmaker, and to accomplish this inadequate machinery has been grouped together and we find in many localities two complete plants under one roof driven from a single line shaft by a single engine. It is the object of this paper to analyze pro and con, this kind of installation, indicating the economies of a large production in a single plant, which seems to be the tendency of recent factory construction.

As the process of manufacture from the clay bank to the kiln is practically the same whether the product be common building, paving or stiff mud face brick, the remarks of this paper may apply to all with equal force. The process consists of reducing the clay either by granulator or dry pan, removing stone either by rolls or screens, pugging the clay and running it in a column from an auger machine. The drying is accomplished by all in a tunnel dryer, waste heat, if a modern plant, so that the handling all along the line is practically identical.

The cost of installation of two machines in one plant is considerably less than installing two plants with one machine each. Some of the points of saving are as follows: It is always good practice and sound judgment to install even in a single plant, one more boiler than is necessary to pull the load. In the large plants, one extra covers the requirements while in two single yards there would be two extra. One large engine is less expensive and more economical than two smaller ones. The same line shaft operates both machines, and there is a saving in pulleys, belts and power. One large fan installation is less costly than two smaller ones, and more economical. One hoist answers for both plants, and the trackage of one plant, both for coal and raw material, answers, for both. It requires but one steam shovel to dig the clay, and but one donkey to pull the cars. I will admit that two machines keep one shovel and one dinky busy, but they are there to work and not to loaf, and it is better to wear out a machine of any kind then to let it rust out. In other respects the two-machine yard is two complete plants. It required two dryers, almost twice as large machine room and twice the kiln room. The labor of installation is less as there is less material to handle and but one construction crew to train.

The operation of the large yard in cost per thousand brick is reduced by the following items. There is but one office force for double output, but one superintendent, and but one set of foremen. The actual labor roll is reduced by the absence of a steam shovel crew, a hoistman, an engineer and a fireman, all among the highest priced labor employed. Throughout the remainder of the plant, however, there are two distinct and complete crews for each department, machines, hacking, transferring, setting, burning and loading.

Maintenance also enters into the question, and speaks in favor of the two-machine yard. The machines being duplicates, the duplicate idea can be carried out in such a way as to have gearing, pulleys and clutches on brick machines, pug mills and granulators exactly alike; one wheel carried in stock will repair any machine.

The objection that a break shuts down both plants will not hold, for the belts on either side can be thrown off, and one side run alone. Should the trouble be with the engine, which is a remote possibility with proper installation, for engines can be bought which are large enough and strong enough not to give a moment's trouble in years of running, you can safely reason that the increased economy has paid the bill in advance.

In making repairs, there are two sets of men thoroughly familiar with the entire plant, who can be called upon in an emergency for over time work. This is an advantage best appreciated by the superintendent, who has tried in vain to pick up a man for an emergency job. Cost of maintenance always depends largely on the original installation and in an economical plant first cost of equipment should and does have little consideration. I do not mean by this to pay more than anything is worth, but not to let the difference in price between a makeshift and the best influence the installation of the former. The best is poor enough for the work it has to do, but it comes nearer to giving a plant a continuous season's run than one would imagine. Take for instance the gearing, one day's run in a large plant will equip every machine with cut steel, yet how many days are now lost through cast gears. And in addition to the lost time from breaks saved the machine runs without noise and jar. The babbitt is not pounded out of the journals, making it unnecessary to rebuild the machine every few months as is now the case. I have seen a set of cut steel gearing which had made 20,000,000 brick, and the wear on the teeth was scarcely noticeable. Yet the small plant and many large ones look upon cut steel as an impossible extravagance. The drive belts on the brick machines can be double leather of ample width, cutting out the constant slips and the rosin can, common to the small factories and cotton belts. A machine belt which slips but one minute per day when running at a 350 rate means a loss of over 100,000 in production in a year's time. These are only a few of the places where the quality of installation guards against loss of time in a season's run. But shows why throughout the plant the installation should be the best, increasing the running time and cutting maintenance to a minimum. Let the output per machine be 40,000 per day, or 25,000 per hour, it can be seen that by combining two yards the cost per thousand is reduced by cheaper installation, by reduction of labor, and reduction of maintenance.

I have been warned that this paper would not interest the majority of this Convention, that few of you cared to ever make 500 brick per minute per machine, but that I doubt, for I believe we are limited not by what we want, but by what we think possible. (Applause.)

J. M. Blair: I have listened with a great deal of interest to this instructive paper presented by young Mr. Blair, and while I may not claim relationship, I am free to say that I would be proud to do so. I move that a vote of thanks be tendered him for his instructive paper.

Motion seconded by Mr. Berry and carried.

Vice-President Conway: Mr. Blair certainly has given us a good paper, and one that we may discuss with profit.

Mr. D. P. Guise: I want to speak on the subject of steel gears. I do this in the interest of brick manufacturers. I have had experience with steel and iron gears. I would not attempt again to use a machine with cast iron gears. I tried that to my great dissatisfaction. I used the Freese machine, which everybody knows is a strongly constructed machine, and while I was using gears made of cast iron I never knew them to stand the work more than about two or three months at the greatest limit. Well, you know what that means, to tear these machines apart and put in new gears. I got extremely tired of that sort of thing, and I ordered steel gears, and I have had steel gears in that machine now for seven or eight years. I am exchanging with Mr. Freese now for a Mammoth brick machine with steel gears, and would not consider any other. I say this for you gentlemen who come here from a distance of hundreds of miles. Don't make that mistake of getting cast iron gears. My material is very hard, so hard that I must use a crusher in connection with my pan to reduce it. My repair bill in one year with the cast iron gears was $9,000—$750 a month.

Mr. Ittner: That beats ours.

Mr. Guise: I did not take the floor for any other reason than to give this information. I come to the convention as a matter of business. We all come here for practical information, and we usually get it.

W. A. Spiers, Boston, Mass.

Mr. W. S. Purington, Galesburg, Ill.: There are all kinds of gears. I think Mr. Guise does not refer to cut gears. He referes to the steel gears in his machine.

Mr. Guise: Yes, sir.

Mr. Purington: Of course, there is quite a difference between steel gears and cut steel gears. I was going to remark on that. I know Mr. Blair has been watching machines in Chicago that have been run at a rate of 500 per minute, and to do that you have got to have your gears about as strong as you can get them. About a year ago, we placed cut steel gears on one of our machines throughout, and I hardly think it pays to put them in unless you are running at a high rate of speed like they are running in Chicago—so fast that you can hardly see the bar of clay moving. Speaking of steel and other things, one thing that has made us a lot of money in the last year or two is the use of manganese steel in the grates of the dry pan and for dipper teeth on shovels. You can hardly realize the benefit of the use of manganese steel where it can be used. You can sharpen the manganese point of the shovel as easily as common steel, and it lasts very much longer. The shovel we are using only has one bolt, whereas the old steel shovel had ten or twelve rivets and the cost of changing the teeth is eliminated. I think cut gears are expensive, and I think it would be better to put the money spent for same into fire-proof construction. I for one propose not to use any more lumber, not because it is too high, but because I do not care about being burned up. In the Western country, lumber is so high it cannot be used very much longer.

Mr. Blair: You are using manganese steel for dry pan grates, and you find it satisfactory?

Mr. Purington: Yes.

Mr. Eisenhart: Do you buy it with the pan?

Mr. Purington: When we ordered our first grates we paid $5.00 each. They were careless in sending them without holes for the spring collars, and we had to return them to Highbridge, N. J., where we had purchased them. It being impossible to drill with any steel we had, we then ordered enough for our entire outfit. We have since had notice that that price had been increased. I suppose for the reason that demand always increases the price. There are sixteen grates to the pan. We put in a set last spring and have never replaced them.

Mr. Guise: As to cut steel, we all know what that means. You can get the cast steel gear that will last you from ten to fifteen years. I know it by actual experience, for I run one for seven or eight years, and that I think is long enough.

S. S. Wyer, Columbus, Ohio.

Mr. Stephenson: Can we get these steel gears from the factory where the machines are made?

Mr. Guise: Yes. Mr. Freese furnishes them. They of course get them cast at the factory. They do not manufacture them themselves, but will get them for you.

Vice-President Conway: If no one desires to speak further on this subject, we will pass on to the next, "The Value of Producer Gas to the Brick Industry," by Mr, S. S. Wyer, Columbus, Ohio.

VALUE OF PRODUCER GAS TO THE BRICK INDUSTRY.

By Samuel S. Wyer, M. E., Columbus, Ohio.

Mr. President and Gentlemen:—

The brickmaker is vitally interested in two banks; the one furnishes his raw material, the other holds his earnings. The successful manipulation of the material from the former will happily increase the value of the latter. Thus, the more efficiently that the process of manufacture is carried on, the larger will be the net earnings. In other words, the brickmaker is in the business primarily to make money and to make as much of this as his conscience, his competitors and possibly a trade union will permit. A decrease in the operating cost will mean an increased efficiency.

In nearly all plants the cost of fuel forms a large part of the total operating expenses. Hence, any system that, in a brickyard, will decrease either the quantity of fuel used or the cost of handling will be of direct interest to the brickmaker. On the other hand, the brickmaker is not interested in exploiting the immature or irrational products of the visionary enthusiast, but is interested only in tangible results such as may be obtained by the exercise of judicious engineering skill.

It is now a well established fact that in heating, the very best results may be obtained only by the use of a gaseous fuel. Higher, more easily controlled and more uniform temperatures—all of which are of the greatest importance in the burning of brick—may be obtained by gaseous fuel than is now possible with solid fuel. Natural gas, while an ideal fuel, is of practically no value to the brick industry in general on account of the limited supply and geographical limitations. The problem is therefore the manufacture of an artificial gas. To be successful, the process must be simple, efficient, continuous, inexpensive and flexible. These conditions are all complied with in the producer gas process. The combination of the requirements just mentioned into one harmonious unit is the sole reason why the producer gas process is now used more than all other fuel processes put together.

Gas producers have been in use for a large number of years. They have, however, been used more extensively in Europe than in America. They have a two-fold interest to the brick manufacturer; first, to furnish gas to burn his ware, and second to operate gas engines for driving his plant. With intelligent use, better results may be obtained in either case than is possible with direct firing in kilns or the use of steam boilers and engines.

Producer gas is a mixture made up of from six to nine constituents. Only from three to five of these constituents are combustible, and about six-tenths of the volume is composed of incombustible constituents, and as a result the heating value per cubic foot is comparatively low. The usual heating value is about 150 b. t. u. per cubic foot. The heat required in the process of gasification is obtained by a partial combustion of the fuel itself. As a result, the efficiency of the gas producer will always be less than unity. With a properly designed producer in normal conditions, the loss should not be over twenty per cent.; that is, the producer will have an efficiency of eighty per cent. In many cases, the efficiency of producers is much less than the value given; this is due to the fact either that they have not been correctly designed or that they are not operated properly. With unsatisfactory producers, the efficiency may be so low as to require more fuel and be more expensive than direct firing or the use of a steam power plant. This is a strong argument in favor of the utilization of engineering skill in designing and installing.

Producer gas, being poisonous, must be handled with a reasonable amount of care to avoid trouble from the asphyxiation of the attendant. With proper ventilation and the use of common sense, there will not be the least trouble from this source. In breaking in new men, however, it will be desirable to explan in detail all the precautions necessary.

The best results from the use of producer gas will be obtained in connection with continuous kilns. The high economy possible with such a combination is not due entirely to the producer itself, but to the high efficiency of the kiln when supplied with gaseous fuel. In other words, the continuous kiln and the gas producer are mutually dependent upon each other. This combination presents so many advantages over the unit kiln that doubtless a large part of the future brick burning will be done in producer gas fired continuous kilns. The attainable fuel economy with such a combination is so much higher than is possible with the unit kiln that brick should be burned considerably cheaper in the former system.

There are, however, conditions for which the continuous kiln is not adapted and in such cases unit kilns must still be used. A scheme that has given good results in Germany is to build the individual fire boxes of such a form as to have the condition of gas firing, i. e., have a thick fuel bed and admit an auxiliary air supply over and above the surface of the fuel, in such a way as to secure a mixture of the air and gases before the latter are burned in the combustion chamber. With this arrangement, it is possible to secure perfect combustion—thus eliminating the smoke nuisance—higher temperatures and better conditions in the kilns. The arrangement is simply the conversion of the usual fire box into a small gas producer. The Christy Fire Clay Company, of St. Louis, is about to introduce this method on some of its present unit kilns for burning fire brick.

A producer gas power plant will be very much more efficient than a steam plant. That is, the combination of gas producer and gas engine will require less coal and water than a steam boiler, and steam engine. The installation, labor and repair costs will be about the same with either system. If a suction type of gas producer is used, the labor cost will be considerably lower than a similar steam plant. A further advantage of the gas producer plant over the steam plant is that no smoke stack is required and the stand-by losses are very much smaller. Small gas engines are very nearly as efficient as large ones. This makes it possible for the man with the small plant to secure practically the same coal economy as his neighbor can get out of a large one. To be more specific, there is very little difference between the rate of fuel consumption of a 50 H. P. gas engine and a 1000 H. P. gas engine. This fact is of vital importance to the small brick industries. A further advantage is that the piping losses in a producer gas plant are practically zero; as a result, it is entirely feasible to eliminate belting and shafting and to drive the individual machines with direct connected engines.

To secure satisfactory results in any gas producer installation, whether for power or heating purposes, an unusual amount of care is required. No general rules can be given to fit all cases. There is absolutely no best form of producer for all classes of work. Each plant must be studied in detail. All the facts determined in such a preliminary study must be co-ordinated to each other so as to secure a harmonious whole. The gas engine must be adapted to the producer and vice versa. The producer must be adapted to the kiln and vice versa. The mere copying of the details of one installation and attempting to apply these to other conditions will be sure to result in failure. A gas producer that gives good results in heating a steel furnace may be an utter failure when applied to a brick kiln. The brickmaker must also learn to differentiate clearly between the smooth-tongued salesman who probably could not tell the difference between producer gas and water gas but yet can grind out words by the thousand, and the trained engineer who deals with causes, effects and results. To be more specific, the successful adaptation of producer gas to the brick industry necessitates the exercise of the highest class of engineering skill and the brickmaker must remember that he cannot get satisfactory results without it. (Applause.)

Vice-President Conway: You have heard this interesting paper of Mr. Wyer's, and I would like to call on Mr. W. B. Chapman, of New York, to open the discussion.

PROLUCER GAS—A SOLUTION OF THE BRICKMAKERS' FUEL PROBLEM.

MR. W. B. CHAPMAN, New York, N. Y.

Mr. President and Gentlemen of the Convention:—

I quite agree with the former speaker (S. S. Wyer) in his prophecy that the brick of the future are to be burned in continuous kilns, fired with producer gas. I think we all believe that some form of continuous kiln will be the ultimate solution of the brickmakers' fuel problem, and will also do much to overcome present difficulties in getting good burns.

The point on which we seem to disagree most heartily is in regard to how long it is likely to be, before the continuous kiln is so perfect in every detail as to compel its general adoption. The gentleman on my right says: "Not in a thousand years." But some of the half dozen brickmakers with whom I have recently talked, who have been using continuous kilns for the past year or two, seem to have very good reason for their belief that the time has already arrived.

While I am not quite ready to take such an enthusiastic view, I do believe that the fair degree of success already obtained in gas-fired continuous kilns is prophetic of a much greater efficiency and more universal adoption in the very near future.

One fact, however, that every enthusiast must bear in mind, is that history tells us that "No generation has ever lived to see the complete annihilation of large investments of capital;" and hence the enormous investments throughout this great country in both forms of the periodic kiln is not likely to be swept away during the lives of most of us present. It will take more than a single generation of progress to relegate to ancient history the present periodic kiln.

For this reason, the remarks I have to offer will be mostly confined to practical questions concerning what can be done to effect greater economies in burning our present forms of periodic kilns.

When at the close of the recent convention of the Illinois Brickmakers, I was requested by your secretary to come to Philadelphia and address you, I inquired: "What do you wish me to say?" He replied: "Just tell them what they want to know."

Believing that you would be most interested in hearing the replies I have made to questions recently put to me by some of the largest brickmakers in this country, I have tabulated a number of leading questions, and divide them into three classes: First, questions pertaining to the application of producer gas to brick kilns; second, question concerning producer gas in general; third, financial questions.

They are as follows:

Q. 1. Have you ever tried to burn brick with producer gas?

Ans. No, we have not.

Q. 2. Why do you believe it could be done successfully?

Ans. There are three chief reasons why we believe that ordinary up-draft and down-draft periodic kilns can be burned successfully with producer gas. First: Any desired temperature in the kiln from very low to extremely high heat may easily be obtained and maintained. Second: An excess of air for carrying off moisture and later for oxidizing may be admitted as desired without detriment to the operation of the gas fire. Third: It is easier to maintain a steady uniform control of a gas fire than a coal fire.

Q. 3. What would be the advantage of burning with producer gas?

Ans. There would be a variety of advantages, in the first place in as much as the adjusting of gas valves is nicer and cleaner work than shoveling coal, it would be possible to employ more intelligent labor for this exacting work. Then again there would be a considerable saving in the labor bill. First: In the labor of delivering the coal about the yard; second in the labor of burning; third in the labor of removing the ashes. If the producers were all located in one place they would probably be handled by one man. One man would do all the work of firing; the coal would all be brought to one place, where it could be handled mechanically; the ashes would practically be removed from one place, and if desired could be handled mechanically. Another advantage would be the increased output of the kilns. Brickmakers now using natural gas are able to burn in about one-third less time than is required when direct coal fires are used. There also might be a saving in the quantity of coal required. In the periodic kiln this would vary from nothing all the way up to possibly 20 per cent., depending on the present method of burning and on the efficiency of the particular type of gas producer to be used. To sum up the advantages therefore, we would have, first, a more intelligent burner resulting in better burns; second, saving of labor in the delivery of coal, the burning of the kilns and the removal of the ashes; third, increased output of plant, due to being able to burn in less time; fourth, a small saving in the fuel bill.

F. L. Stiles, North Haven, Conn.

Q. 4. What improvement would there be in the quality of the brick?

Ans. A few brickmakers have told me that the quality of their brick could not be improved—that their burns are so nearly perfect that they have no troubles along this line and that they have no fuel problem. They are indeed fortunate! To those of you who have not attained to such a degree of perfection, I would say that the difficulty you now have in always getting a uniform burn would be very much lessened if you were able to employ more intelligent help, and if you had at your command all the gas necessary to produce and maintain any desired heat. With an evener fire it is reasonable to expect evener results Then, again, you would have no trouble from smoke or ashes, and very much less trouble from sulphur.

Q. 5. What difficulties would you expect to encounter?

Ans. The first difficulty would be the teaching of your men how to operate a gas producer. This is usually about as difficult to learn as the firing of a boiler, and you all know that some men make good firemen while others never do. The second difficulty would be in getting acquainted with the looks of a kiln when fired with gas. There might be a slight difference in the color and glow of the kiln and this at first would be likely to give rise to some trouble in judging the actual conditions in the kiln. After your men have learned how to handle gas producers and your burners have learned what a producer should look like inside at all stages of the heat there would then be little trouble in operating the plant.

Q. 6. How would you apply producer gas to periodic kilns?

Ans. We would install our producers all at one place where they would be convenient to the railroad and at the same time near the center of your yard, if possible, although this would not be essential. We would then run a large main gas flue from the producer out through the yard. This flue would have branches off from it leading to each kiln. If the gas were to be attached to ordinary down-draft kilns there would be a branch pipe leading into each fire place you now have. In this pipe will be a valve for regulating the amount of gas admitted. Just above where the gas was admitted, the air for supporting the combustion would be admitted. The two would combine behind the bag wall and the flame would go up over into the combustion chamber, just the same as it does with the ordinary direct coal fire, except that the quality of the flame would be more like the flame from wood, it being longer and softer and more easily diffused throughout the kiln than a coal flame. At the same time any desired temperature can be obtained even enough to melt fire brick, as our experience has only too often demonstrated.

Q. 7. What repairs would be required?

Ans. Owing to the fact that producer gas does not make as intense a flame as either natural gas or a direct coal fire, your repair bills will be much less than they are at present. They would be reduced by at least fifty per cent.

George O. Berry, Columbus, Ga.

Q. 8. What labor would be required?

Ans. One burner could easily handle the valves on twenty-five kilns as it would not be necessary to give them any attention more than once in an hour or two.

Q. 9. Would a separate producer be required for each kiln?

Ans. No, it would be much better to have all the producers placed together. It is the German idea to have one or more little producers built into each kiln but American practice has proven that this is not the right method. We had a little experiment but recently with a furnace which was built for the General Chemical Company, by a German engineer. It was heated with three little German producers built into the walls of the furnace. One of our producers was purchased to take the place of the three German ones, and was located some little distance away from the furnace. When in Chicago a couple of weeks ago, I visited the plant where this producer was in operation and was informed that the one American producer with automatic feed, with one attendant, was doing the work of the three German ones and was turning out a much better, as well as a larger product with a consumption of 10,050 pounds of coal a day, while the three German formerly required 15,000 pounds of coal a day, and one man for each of the three producers. What the General Chemical Company seems most pleased about was not the saving of one-third of the coal bill, but the fact that they had now no trouble with the quality of the goods they are turning out, while before, owing to the varying quality and quantity of the gas, they were constantly in trouble.

Q. 10. How many kilns would one producer handle?

Ans. From one to ten, according to the size of the kilns and the producer.

Q. 11. How many producers would be required for any given sized plant?

Ans. One producer would be required for every ten to thirty tons of coal now being consumed in twenty-four hours.

Q. 12. How long would it take to burn with producer gas?

Ans. When natural gas was applied to the burning of brick, it was found that the length of time required was reduced to about one-third. We would expect the same reduction if producer gas were applied?

Q. 13. Would there be any smoke?

Ans. There would be practically no smoke at all.

Q. 14. How large flues would be required?

Ans. The gas being under such light pressure, large flues are required. The flues around each kiln would be in the neighborhood of two feet square and the branches leading into each of the present firing furnaces would be about eight inches square. All flues would be made of common brick, with no iron work.

Q. 15. What do you know of attempts that have been made to burn brick with producer gas?

Ans. I have heard many of such instances, but on hunting them down have invariably found that I had been misinformed. A typical case occurred recently at New Haven, Conn. A brickmaker of that city refused to discuss the subject, saying that producer gas had been tried and proven a failure. I found out from one of his clerks that he referred to an experiment tried at Haverstraw, N. Y. I went to Haverstraw and investigated at once, and had a long talk with the brickmaker in question. It turned out that he had undertaken two experiments at the same time, one to make a new kind of gas from oil, and the other to burn brick with this gas. The first experiment failed and the second of course had to be abandoned. In endeavoring to make gas in a new way from oil, the car of oil was burned up, and the entire plant came near being destroyed. The experiment had nothing to do with producer gas, which is made from soft coal and not from oil.

Q. 16. Do you believe that producer gas is the only possible solution of the clayworkers fuel problem?

Ans. I believe that if producer gas was not the cheapest and best way of generating and applying heat, it would not be universally adopted in all the steel and iron works of this country. I therefore believe that for the same reason it is so generally in use in our rolling mills, that it will ultimately come into universal use in the brick industry.

Q. 17. What do you think of the continuous kiln?

Ans. I think that it is the ultimate end toward which we are surely progressing. It is right in principle and in some cases has been worked out so that it is right in detail. It is only a matter of time before the continuous principle, which is theoretically right, will be made practically possible. The use of producer gas on the periodic kiln I consider only a step toward the ultimate end. It is a step in advance and means progress. But it is not the final end. It will acquaint the brickmaker with producer gas and will increase the brickmaker's knowledge of this exceedingly useful fuel. But, as I said before, however good it may be, the final end lies beyond periodic kilns.

Q. 18. Would there be an advantage in using producer gas on continuous kilns?

Ans. This is the real field for exploiting producer gas. I have investigated a number of attempts to use continuous kilns which have failed and invariably I have found that had producer gas been properly applied to the kilns they would have proven an unquestioned success. In fact the use of producer gas is going to make possible the continuous kiln. The best continuous kiln today is one fired with producer gas. It is along that line we must look for advancement which will be both permanent and lasting, and not a mere making over, rebuilding and remodeling of the kilns on hand.

QUESTIONS IN REGARD TO PRODUCER GAS IN GENERAL.

Q. 1. What is producer gas?

Ans. An unscientific answer would be that it is the mixture of gases may by passing air steam through a thick bed of incandescent fuel. The bed of fuel is usually about three feet thick, and is at the temperature of glowing coals. If the fuel bed be in good condition and is without any blow-holes or chimneys in it, a large amount of air can be blown through it without detriment and a correspondingly large amount of producer gas will be made. If, however, the fuel bed is uneven as to density and temperature, the air and steam blown through it will be but partially converted into producer gas, and the resultant mixture will be weak in heat units and uneconomical to use.

Q. 2. What does producer gas cost?

Ans. Producer gas usually cost about two cents per thousand cubic feet, but varies from one and one-half to three cents, according to the price of coal and labor conditions.

Q. 3. How does producer gas differ from natural gas and from city gas?

Ans. Producer gas contains about 1000 heat units to the cubic foot. City gas or street gas contains about 500 British Thermo units to the cubic foot, and producer gas contains from 100 to 220. The great variation in the strength of producer gas is chiefly due to the way in which it is made. The average producer now on the market probably makes a gas of approximately 150 heat units to the cubic foot. The strength of the gas, however, varies over a wide range, according to the faithfulness of the attendant. With automatic producers the labor problem is handled in better shape with corresponding uniformity and betterment of results—the average strength of the gas often being over 200 B. T. U.

Question from Audience. How many cubic feet of producer gas are made from a pound of coal?

Ans. About sixty.

Q. 4. What kind of coal is required?

Ans. Bituminous coal is practically the only coal used in gas producers for heating purposes. As to the size of the coal, it is best to avoid slack and use a grade that has more lump in it. Nothing better than run-of-mine is ever required, unless either the quality of coal or the design of the producer is extremely inferior.

Q. 5. What labor is required?

Ans. Ordinarilly one man is required for each producer, but when the coal is fed in automatically from over-head bins one man will handle three producers.

Q. 6. Is a gas holder required?

Ans. No, a gas holder is not required or used.

Question from Audience. What is the temperature of the gases coming from the producer?

Ans. From 300° to 1500° F., according to the make of the producer.

Q. 7. How do you regulate the amount of gas made?

Ans. The quantity of gas produced is regulated by adjusting the valve operating the steam jet blower, which forces air up through the fuel bed.

Q. 8. What pressure is maintained in the gas mains?

Ans. This varies with different practice, from practically nothing all the way up to four inches of water, this would be equivalent to 2.4 ounces. In other words, the pressure is usually about one-half as great as is ordinarily carried on city gas mains.

Q. 9 How do you keep the pressure from varying?

Ans. A regulating valve is used which works as follows: When the pressure starts to go down in the gas main a steam valve is opened which forces more air into the producer, this making more gas and bringing up the pressure. Then if the pressure tends to get too high the regulating valve shuts off the amount of steam and less gas is made, thus keeping the pressure at the required average.

Q. 10. Will producer gas burn without being preheated?

Ans. Formerly with the old style of producers and the poor quality of gas made, it was to quite an extent necessary to preheat either the gas or the air and preferably both in order to insure anything like steady operation. I have been told by one of the members of the Association that some twenty years ago he tried producer gas and had a great deal of trouble in starting it to burn. Sometimes he would be obliged to spend an hour in lighting it. This means that sometimes he had to put an hour's work on the fuel bed in his producer to get it into shape where it would make a good grade of producer gas. Good producer gas will always burn without preheating. This fact we are constantly demonstrating in a number of plants where there would be no advantage in preheating. I know of some instances where it was thought that preheating was necessary and later it was found that there was no advantage gained and the preheating arrangement was torn out with very gratifying results. While we do not mean to imply that it would not be an advantage to preheat the air in the manner as made possible in the continuous kiln we do say most emphatically that a good grade of producer gas such as is ordinarily made in a Modern Automatic Gas Producer will give no trouble in burning without being preheated.

Q. 11. Is there danger of the gas going out after once being lighted?

Ans. There is no danger if you are making a good grade of producer gas such as we have been speaking of. Circumstances which might result in trouble along this line would be in the nature of having trouble with the gas maker being drunk or going to sleep, or in any way neglecting a producer for several hours. Results equally bad would be obtained if the ordinary boiler fireman should neglect his work for an equal length of time.

Q. 12. How is the gas lit?

Ans. The gas is merely lighted by turning on the gas gates one at a time and applying a torch. The flame starts at once without explosion.

Q. 13. Is there any danger of explosion?

Ans. Yes, there is some danger of explosion but the risk is not equal to that of operating an ordinary steam boiler where the possibility of explosion is much greater. Explosions, if they do occur, are usually caused by gross neglect at the time of the starting up of a plant that has been idle long enough for the flues to become filled with air.

Q. 14. Are the explosions violent?

Ans. Producer gas being such a weak gas (only about one-fifth the strength of natural gas) the explosions are not violent and never do any harm more than to blow off a few cleanout doors. My brother was inside of a flue once when it exploded and the only visible effect was that his nose was blistered for a week afterward. He said afterward that he did not know whether his nose was burned from the heat of the explosion, which of course was over instantly, or whether he happened to hit it against the brick work in his energetic effort to get out of the flue.

Q. 15. What repairs are required on the producer and flues?

Ans. The temperature of the gas seldom being over 1000° F., there are practically no repairs in the flues. In the producer itself there is a somewhat greater heat, but not nearly so intense as that in an ordinary boiler furnace. The brick linings therefore last considerably longer than the lining in an ordinary furnace, five years not being uncommon. The Automatic Feeds in the six years we have had them on the market, in case they have been handled right, have required no repairs whatever.

Q. 16. Can producers be operated to advantage at much below or above their rated capacity?

Ans. With good coal producers can usually be run about 50 per cent. above rated capacity, but their most economical operation is, if anything, a little below what they are rated to do. There is no trouble, whatever, about running a gas producer at one-half capacity and they often can be run at one-quarter capacity.

Q. 17. What are the stand-by losses in operating a gas producer?

Ans. The stand-by losses are very much smaller than in an ordinary boiler furnace. A producer can be shut down for a week and will still have sufficient coal and fire in it to be easily started up again on short notice.

T. C. Lundy, Knoxville, Tenn.

Q. 18. How is a new producer started up?

Ans. Ashes are filled in the bottom of the producer up to two or three feet, or high enough to cover the blower hood, then a foot or so of kindlings are put in and the fire lighted. Coal is added as fast as possible and usually in a couple of hours a good thick bed of glowing coals is obtained, which is all that is necessary to make good producer gas.

Q. 19. How are the ashes removed?

Ans. There are no grates in the bottom of a modern gas producer. The ashes rest in a water basin which forms the bottom of the producer, and is usually filled with about 18 inches of water. To remove the ashes a shovel is inserted in this basin and the wet ashes are removed once every 24 hours as desired. This operation in no way hinders the working of the producer, which is perfectly continuous, the fires often being kept up for several years.

Q. 20. Is any coke or other by-product made?

Ans. The ashes seldom contain more than one-half per cent. carbon and no coke or other by-product is made. At the meeting of the Ceramic Society a gentleman got up and said he had had a number of samples of his ashes analyzed and found that they contained 33 to 34 per cent. carbon. If the total amount of ash made in this case was 15 per cent. of the total amount of coal consumed (and this would be a very small proportion) the loss from this source would be one-third of 15 per cent, or 5 per cent. of the total amount of coal consumed. This loss is never present in a gas producer and goes a longer way toward off-setting the losses by radiation in the gas producer.

Q. 21. How is the coal fed into the producer?

Ans. There are two ways of performing this operation. The ordinary way is to shovel a bushel or two of coal into the hopper on top of the producer and then suddenly let it drop into the fire by lowering the bell-shaped bottom of the hopper. The bell acts as a spreader and fair results are obtained, but at best the spreading is not even and its operating is periodic, say once in ten to thirty minutes depending upon the faithfulness of the operator. This method of feeding never secures the best results. The air in being blown in through the bottom of the producer tends to take the course of least resistance in passing up through the fuel bed and naturally dodges the masses of fresh coal recently dropped in. In this way blow-holes or chimneys are formed and large clinkers are produced. The other method of feeding is by machinery which operates continually, feeding in a very small amount of coal all the time and at the same time spreading the coal much more efficiently than can be done by letting it slide over a bell. With this mechanism the average strength of the gas is kept higher than in the old way, there being a difference of from 5 to 20 per cent. in the heat units per cu. ft. and hence a corresponding saving in the quantity of the coal required.

Q. 22. How much steam is required to operate the jet blower?

Ans. About ten horse-power (10 HP) per producer.

Q. 23. How much water is required for the water-cooled parts of the producer?

Ans. About one barrel per hour.

Q. 24. What are the producer-man's chief troubles?

Ans. The chief difficulty in operating a producer is to keep the fuel bed in uniform condition, always about the same depth, about the same temperature, free from blow-holes and from clinkers. There is also some trouble in keeping the flues cleaned out. Other than this there are practically no difficulties encountered at all.

F. Salmen, Slidell, La.

Q. 25. Why has the development of the modern gas producer and its application progressed so slowly?

Ans. In the first place problems involving the use of coal are looked upon as "dirty" and are not attractive to the majority of engineers. There is, however, a better reason than this. The generating and applying of heat is a complex problem into which many factors enter. It is not like a simple problem in steam engineering where one deals with constant factors such as steam, always pure, always dry, always at the same pressure. With such propositions an engineer can start with known laws and arrive with accuracy at a definite conclusion. With producer gas, however, we have a variable that is never twice the same. It is composed of many gases whose relative proportions are constantly changing. The fuel bed may vary in depth, temperature or density and each change produce a marked difference in the quality of the gas. The quantity generated varies with the pressure of the air and the resistance it meets with. The coal itself is seldom twice alike, both its physical and chemical proportions vary over a wide range and condition. Hence, we believe that the generation and application of heat is an intricate branch of science requiring for its successful exploitation engineers of special knowledge and experience.

FINANCIAL QUESTIONS.

Q. 1 What does it cost to equip perodic kilns with producer gas?

Ans. About $2000.00 for every ten tons of coal you are now consuming in every 24 hours. In a large plant it would be somewhat cheaper; in a small one it would probably be more.

Q. 2. What per cent. would be made on an investment in a gas producer outfit?

Ans. It would not be *more* than 100 per cent. However, several brickmakers with whom I have recently gone into the matter in detail figure that the saving effected would be very close to 100 per cent. of the total cost of the installation.

Q. 3. What guarantee would your company make?

Ans. The guarantee that we have recently made in contracting with two of the largest paving brickmakers is virtually that we will give them satisfaction or remove our producers and machinery and make no charge for the expense we have been put to in connection with the contract. We are not open to any other propositions along that line with manufacturers of paving brick until we have completed the tests now in hand. We are, however, prepared to enter into similar contracts with a few representative manufacturers of terra cotta, pottery, sewer pipe, face brick and common brick made in up-draft kilns. If, by the use of producer gas there is a saving in the labor bill, a saving in the fuel bill, a decrease in the time required to burn, and improvement in the quality of the output and a general betterment of the conditions about the plant, the ordinary brickmaker will feel satisfied.

In closing let me repeat a question asked me at dinner yesterday. A gentleman said, "Mr. Chapman, I suppose you are coming to the convention next year at St. Louis and explain to us how it was you failed to make good on your guarantees." Yes, I told him I would come to St. Louis next year and make the explanation so that you may all profit thereby, or I will bring an assistant with me to help take down your orders. (Applause.)

General Discussion.

Vice-President Conway: The manner in which Mr. Chapman has been interrupted with the question during the delivery of his address indicates the deep interest that we all have in this subject of economy in fuel. It is a very important matter with us all, but I doubt the advisability of devoting further time to it now. What is your pleasure?

Mr. W. S. Purington: I do not wish particularly to close this discussion, but I think I can do so in a very few words. I have attended a good many conventions, and I hope to be at the next one, and in the meantime I hope to know a great deal more about producer gas than I do at the present time, for we expect to install a gas producer, and when it is installed, our plant is open to every member of this Association to visit and inspect. You can get to Galesburg, Ill., for less than $100.00, and if any of you think you can demonstrate one of these plants for less than $100.00, you do not know. I think the discussion has been thorough, but a practical demonstration will prove more, and I think everyone interested can afford to spend the money necessary for the trip to the West. You can all come in a body, if you like, but that probably will not happen, but you are cordially invited to come, singly or in bunches, and see that plant after it is installed and is in operation. (Applause.)

Mr. John Miller, Washington, D. C.: I move a rising vote of thanks to Mr. Chapman for the clear way in which he has presented this matter to us.

Motion seconded by several and carried.

Mr. Lemon Parker: I wanted to say a word in regard to Mr. Wyer's paper. I have heard both of his papers, the one he delivered before the Ceramic Society and the one he has given us this morning. I think he has given us a very valuable paper. I feel so from the fact that I have used producer gas continuous kilns mysef, and while I may not agree with him in all respects, I realize the value of his contribution. Neither do I agree with all Mr. Chapman said, especially when he said he could lead the gas a long distance and use it. I do not believe that is practical. We lead the gas to a kiln a distance of 100 feet, and found difficulty lighting it. We put in a continuous kiln about four years ago, lighting the gas at 40 feet, and was more successful, but we have trouble with the filling up of the gas flues with soot, and to-day we are experimentng with a gas producer built right against the the kiln itself, and it has proved successful, and I am sure the gas producers will be a success if the gas is not led too long a distance. I desire to say that I think the thanks of the Association are due

Mr. Wyer for his able paper, and move that our thanks be extended to him.

Seconded by Mr. Blair and carried.

Vice-President Conway: I believe we were a little negligent in that respect, and I am glad Mr. Parker called our attention to it.

Frank McAvoy, Philadelphia, Pa.: I have a resolution I desire to present to this convention, and will ask Mr. Randall to read it for me.

RESOLVED, That we, The National Association of Brick Manufacturers, in convention assembled at Philadelphia, deem the investigation of clays and clay products, cement, mortars and other structural material, now being conducted by the United States Geological Survey, of such far-reaching importances to the people of the country, that we respectfully ask the Congress of the United States to make large provisions for the continuance of this important work on a more extensive scale.

Mr. McAvoy: I would like to say, while I was in St. Louis I saw this matter when it was first taken up, beginning with the testing of fuel, and they are still working on that and have been at it for eighteen months. When they get through with that, they will take up the different building materials, clay, brick, sand, concrete, stone and all other structural materials. Within thirty or sixty days there will be a bulletin published giving the results of the tests made, as to the different grades of coal, where they come from, etc. What we have heard here this morning will be taken up and these questions will all receive a great deal of attention, and we ought to have some part in it.

Secretary Randall: This resolution on its faces appears perfectly fair and proper, but there are one or two things in this connection that I desire to call your attention to. If the experiments are to be carried on in the interest of cement products we have little interest in them. If they propose to direct their attention and efforts to clay products, then we are interested. I have an idea that cement manufacturers are deeply interested in these tests for they hope to have the Government officials give their cement products a certificate of character, and it should be born in mind in this connection that such certification may be very misleading to the building public. For instance, if the Government tests are made with high grade cements, and an admixture of a minimum of sand, won't it give color to the claims of cement promoters that low grade cements and low grade concrete mixtures are safe structural materials? If a high grade mixture is used, the manufacturers of clay products have little to fear in the way of competition. It is the cheap or low grade cement and concrete products only that are to be feared, and these are dangerous, because they are not what they pretend to be. They are not only cheap, but unreliable, and yet in appearance may seem to be satisfactory. You cannot tell by looking at a cement block or a piece of cement wall whether it is good, bad or indifferent. The cement expert himself can only guess as to the quality of the product, and if the contractor or manufacturer is not over-scrupulous and adds an undue quantity or a poor quality of sand in order to cheapen his product, the user is none the wiser until by test of time the wall gives away or proves inefficient. Now, you all know that just the reverse of this is true with clay products, the veriest tyro in building knows the difference between a good brick and a poor one. There is no guess work about clay products. The user knows what he is getting when he gets it. On the other hand, there is nothing but guess work about building materials of cement. This being true, is it not possible that Government tests of high grade cements and high grade mixtures; that is a mixture of a maximum of cement and a minimum of sand, will be used to bolster up cement and concrete materials which when made of low grade cements and law grade mixtures, that is, a minimum of cement and a maximum of sand, are wholly unreliable, and it is these latter mixtures, the cheap sort only, that you have to fear. It seems to me that we ought to have some assurance as to the scope and character of these tests before we lend our endorsement to the movement.

W. P. Blair: I want to say a word concerning this resolution. There is something about this matter that I do not think our Association is aware of. If you will look over the list of organizations that seem to be identified with this movement you will notice this: there is not a member of the National Brick Manufacturers' Association named anywhere on the official roster of the committee that has this in charge. I do not know why this is the case, but it does seem to me that the National Brick Manufacturers' Association, representing as it does, the largest amount of capital, their product being worth more, with one or two exceptions, than any four or five in the United States as to the value of manufactured product in this country, and yet this Association is not represented on that Committee. I have heard it intimated, but I do not make it as a charge. Mr. Randall in his remarks has indicated and has given proof to the color of the rumor, and the rumor is abroad in this country that a representative of the National Brick Manufacturers' Association is not wanted in that crowd. Behind it is the purpose to promote and advance the interest of reinforced concrete construction in this country, and if that is the case, we do not want to give them a seeming endorsement.

S. Geijsbeek, St. Louis, Mo.

Mr. Gregory: I move this resolution be laid on the table.

Seconded by Mr. Albert Klein and carried.

Vice-President Conway: The Secretary will kindly announce the next order of business.

Secretary Randall: The next in order is a paper, "Burning Drain Tile With Producer Gas," by Mr. J. M. Powell, Brooklyn, Ind. Mr. Powell is not present, but we have his paper to be read for him.

BURNING DRAIN TILE WITH PRODUCER GAS.

By J. M. POWELL, Brooklyn, Ind,

Mr. President and Gentlemen of the Convention:—

Having been identified with the manufacture of drain tile in the natural gas belt of Indiana, during the days when natural gas was plentiful and cheap, the writer had occasion to become quite familiar with the use of this fuel for kiln burning, but will admit that he did not fully appreciate its great advantages until he again had to resort to coal as fuel after the gas supply gave out. The inconvenience and trouble encountered in the use of solid fuel for kiln burning as compared with gaseous fuel was a daily reminder of the good old days of plentiful gas and created a hankering for improvements in that line, a want for something that would take the place of natural gas and could be handled with equal ease and accuracy.

Investigations along this line developed the fact that producer gas, generated from coal, would be the next best substitute, and would have the advantage in being derived from a staple article of which the known supply is almost unlimited.

Inquiries among the best authorities on this subject convinced the writer that this fuel would not be applicable for kiln firing, except in connection with some system of preheating the air required for its combustion, and as this requirement was readily coped with in the continuous kiln, it appeared that a system of gas-fired continuous kilns would be the most practical solution of the problem.

These investigations were carried on with the view of selecting the most practical and up-to-date system of burning for our new plant which we erected at Brooklyn, Ind., last year, but as there was not, to our knowledge, any gas fired continuous kilns in use in this country burning drain tile up to that time, our project was of course looked upon by fellow craftsmen, as a very hazardous experiment, and many discouraging predictions of its probable outcome reached our ears.

Nevertheless, we decided to erect the "Youngren Kiln" and gave Mr. Youngren "chart blanc" to proceed to erect a kiln most suitable for our purpose and I am pleased to be in position now to state that we made no mistake.

Our kiln consists of a battery of twelve burning compartments each of which is sixteen feet, six inches wide, thirty-two feet long and thirteen feet, six inches high, and holds about four carloads of drain tile per compartment.

In addition to the necessary draft, gas and hot air flues required for carrying out the functions of the kiln, it is provided with a supplementary flue connection through which a portion of the heat is carried from the cooling compartments into the dryer by means of a fan.

F. A. Stephenson, Mason City, Iowa.

The gas producer is located at one end of the kiln and the coal storage is put in close proximity to it, so that the fireman takes the coal from the storage and puts it directly into the producer as required.

In this manner the handling of the coal is reduced to a minimum as it does not have to be carried around the yard to different kilns.

We find the handling or operation of the kiln to be very simple and the means provided for adjusting and regulating the temperature and distributing the heat throughout the compartment, leaves nothing to be desired. Although the heat is generated at one side of the compartment only, it is a remarkable fact that there is scarcely any difference in the hardness of the burn in the different portions of it.

The kiln was designed for a capacity of one compartment every twenty-four hours, but we find that when we have plenty of dry tile to keep the kiln in full operation, a compartment can be burnt off every eighteen to twenty hours with a fuel consumption of from four and one-half to five tons of Indiana bituminous coal.

On the other hand, if we have not sufficient dry tile set to burn off a compartment every twenty-four hours, we find that we can stop the burning for a period up to forty-eight hours and then proceed again without any inconvenience or damage to the ware. In this case, however, the fuel consumption is increased on account of the partial cooling of the ware, but even under those unfavorable conditions we burn the ware with less than half the fuel required in the round down-draft kilns. It will thus be seen that there is a considerable saving in fuel, but what we value quite as much, if not more, is the fact that we obtain a much larger per cent. of evenly burnt ware than we have been able to obtain in the round kilns.

In concluding these few statements in regards to our experience with the continuous kiln, I will simply express my sentiment, as well as the sentiment of the other members of our firm, by saying that "we would not care to be in the business at all without the continuous kiln." (Applause.)

Questions for General Discussion.

Vice-President Conway: This brings us to the first of the questions for general discussion, "Can Brick be Burned in Continuous Kilns with Oil as a Fuel?"

Mr. Eisenhart: I will answer that question in the affirmative. It has been done successfully by Brush Brothers, of Buffalo, and was only discontinued because the oil got too expensive.

Vice-President Conway: If there is no further discussion, we will pass on to the next question, No. 21, "What is the cause of Whitewash or Scum Appearing on Face Brick? How Can it be Prevented?" (Laughter.) Ellis Lovejoy presented a very excellent paper on that subject before the Ceramic Society and he can tell us about this if he is in the room.

W. E. Dunwody, Macon, Ga.: There are some of us here to-day who were not here forty years ago, and we would like to have that question answered.

Mr. Eisenhart: I will say for the information of the gentleman that if you will call on Mr. Francis, of Shamokin, he will give you some information on this subject. I was at his works recently and saw a beautiful kiln of brick and I saw some wood, and I asked him if he burned with wood, and he said, "No, but we watersmoke with wood, because if we don't our brick are discolored with a scum, and since we have used the wood, we don't have that trouble."

Mr. Gates: I have listened to these discussions in the past, and will say that that paper of Mr. Lovejoy's has more meat in it than all the others I have ever heard, and it struck me as the best paper on the subject we have ever had.

Mr. Dunwody: Would it not be possible for us to get a copy of the paper and have it published in the proceedings of this convention?

Mr. Blair: The distribution of the paper, as I understand it, is limited to the members of the Society. Join that Society and you will get that publication, and I think it is worth while, provided they will take us in. It is well worth the cost for every member of this Association to connect himself with the American Ceramic Society, so long as they will let us do that, and we ought to take advantage of the opportunity.

Mr. W. A. Spiers, Boston, Mass.: The question under discussion interests me very much. The question has been asked me if there is no definite information published on this subject in The Clay-Worker, and if this paper of Mr. Lovejoy's will not be published in The Clay-Worker.

Secretary Randall: At various times papers on this subject have been printed, and the reports of the various conventions have touched upon it. The thing has been threshed out a great many times, but like Banquo's ghost, it never downs, but comes up constantly. I have no doubt at all but that Mr. Lovejoy's paper is very exhaustive and goes deeper into the subject than anything heretofore published, and in due time it will be published in The Clay-Worker, of course.

H. Connell, Holton, Mich.: I am rather a young brickmaker and have charge of our yard. We have always been troubled more or less with that scum, and I thought I might learn something here that would be of some benefit to me. I tried the experiment of setting the brick loose and burning them that way and did overcome it to a certain extent. We have had twelve or fifteen different explanations explaining why this happens, and what caused this whitewash. I do not think this is a question to let pass because the old brickmakers laughed at it. The young ones have to learn, and if they can learn here in this convention, it will save them trouble.

Mr. C. P. Mayer, Bridgeville, Pa.: I am also one of the infants, and when these old codgers laughed at these young fellows, it roused my ire. I have also a strata of clay which contains this scum and we would like to know something about it. I say it looks like a copper head, and we want to kill the snakes. Now, if these old members have succeeded in killing these snakes heretofore, we would like to share this information. I would like to ask if there is a scientific treatise covering this question of scum, and if so, where it can be obtained, outside of these papers that have been read.

Mr. W. D. Gates: I want to say that I laughed at this question, and I did not laugh because I knew it all. I laughed because I knew so little. This question has been up for so many years, and one man has said one thing and another man said another, and when we got through we did not know any more than when we started. We laughed, I say, because we knew so little. Mr. Lovejoy is one of the oldest members and one of the most scientific manufacturers, and according to my humble opinion he said better things and came nearer to a conclusion than anybody has come, because there are so many different kinds of scum, and Mr. Lovejoy gave more information than there is in all the rest of the literature on the subject, and I acknowledge right here that I do not know all about it, and I do not believe any one does or will for a long time to come, and one man may get results by setting his brick wider apart, and that will fail with some one else who has not got a clay just like his.

Mr. C. P. Mayer: We have experimented with this matter ourselves. We have some shales that don't contain the scum, and we have others that do. We know how to set them to keep the scum from appearing and we know how to dry them, but what I would like to accomplish is to know how to keep it from appearing after the brick are in the building. (Laughter.)

Mr. Anthony Ittner: Mr. President, I guess I am one of the old codgers that started the guffaw, and I did it with very much the same spirit that actuated my friend Gates. He said he laughed because this matter has been talked over so much, and we know so little about it. It is pretty much the same with me, and when I first laughed, I did not understand that it meant the scum on the brick in the kiln when they are burned. I had in mind the discoloration of the brick in the building after being laid in the wall. As stated, there are so many phases of this question, the discoloration of brick in the kiln, caused during the process of burning and drying, and the scum on the brick in the building caused by the action of the weather, so that a proper explanation of the subject would require a man who thoroughly understood the subject and with more time than we have remaining at this session to cover the ground, but so far as this discoloration of the brick in the building is concerned, I think I can cover that question. I presume that no man ever witnessed discoloration of brick in a building unless these brick had become saturated with water, and if that proposition is true, the only way to prevent that discoloration of brick is to keep them dry. It is like powder—powder will not explode until you put a match to it. Brick will not discolor in a building until they become saturated with water, and it is that salty substance in the clay of which the brick are made that is called by so many different names, alkali, and salt and magnesia that causes it. Now if it were possible to take that ingredient out of the clay I presume it would not appear in the brick in the building. Some six or eight years ago, as near as I can remember, there appeared in a Chicago paper an offer by some Chicago architect of a reward of one-hundred thousand dollars to any one who might discover a solution of the trouble, and give a receipt to prevent and do away with this discoloration on brick which appeared after being laid up in the wall. This action on the part of said architect, I regarded at the time as an advertisement, and I am of the same opinion still; it would be just as safe, in my opinion, to offer a reward for a pigeon that could outfly its tail or a leopard that could change its spots.

With reference to the discoloration of brick in the kiln, that is caused by so many different things that I do not think I can tell the brothers here present what caused it in their cases. On one occasion we dried off our brick with coke and that coke caused the brick to have a slight discoloration. It was not sufficient to be objectionable, but it was a slight coating, as it were, over the brick, but the face of the brick were not discolored, because we had the brick set face to face on top of each other and as the air containing this substance passed through the kiln it could not reach the face of the brick, and so only the ends and sides were discolored. That was one form of discoloration. I can imagine that any one would get that scum if they burned with a coal that contained any considerable portion of sulphur or if the clay contained magnesia or saltpeter. Drying off your brick with a coal containing sulphur would cause it. Another thing that causes this discoloration is dead spots in the kiln, for we found where we would have these dead spots in the kiln, the brick would scum and I explained that by the fact that the brick were not thoroughly dried. I should say that we do not have dry kilns, we make brick by the dry press process, and we take our brick directly from machine to kiln, set forty-two high. These brick are very dense, more than brick made by any other process, and it takes them a longer time to dry off, and we had not kept the kiln under the drying off process long enough to allow these spots to become thoroughly dry, and our coal contained considerable sulphur, and when we got a temperature of 220 to 225 degrees, it allowed this sulphur in the coal to adhere to these brick.

G. M. Krick, Decatur, Ind.

Mr. M. E. Gregory: As a manufacturer of terra cotta I have had more or less of this scum trouble, and I have found that carbonate of barytes mixed with the clay would overcome it to a large extent. In a kiln watersmoked by coal with a large percentage of sulphur, it gives us more trouble than coal which does not have the sulphur in it. I have also observed in a muffle when the kiln is handled too quickly that we will have this same trouble. I merely speak of this because if you are making a high grade brick and will use this carbonate of barytes, you will overcome this trouble.

Mr. W. D. Richardson: To show you that the other people are considering this same question, the Brick Manufacturers' Association of Germany have been taking up this question in this way. They appointed or secured the services of Dr. Mackler, a celebrated German scientist to investigate for them and make a report on this very question of scum on face brick, and he has been two or three years making these investigations. He has made two reports and still has not finished the subject and is to make one more report. It will be the most exhaustive investigation of scum that has ever been made anywhere, and will be very valuable to those able to get it from the German, and it is possible it will be translated by someone who reads the German papers. I think I understand, in a measure, why some of us smiled. We have had this subject at every convention of our Association, and we have not seemed to make any progress whatever. We have got just about so far and there it has dropped. We can not expect anything more of discussions of that sort. We have got to have some scientific man investigate this thing for the Association, pay him for it. We have men of that sort in this country, and should have them make a thorough report on it. There are a few directions, as Mr. Ittner has said, that can be given that are valuable to those manufacturing face brick and he has given these suggestions here. The sort of scum we mean is the scum in manufacture, and the scum that appears in the face brick after it is in the wall. The chief direction I give in manufacture is to watersmoke the brick with wood or the hot air from cooling kilns, and in any case whether you watersmoke with coal or wood, have a strong circulation. It comes out in slow drying, but in rapid drying it does not.

S. M. Duty, Cleveland, Ohio.

The scum in the walls, after the brick have been laid up, comes from being saturated with water, as Mr. Ittner says, and because the architect or builder does not provide for the proper carrying off of the water in the cornices. There is no red brick that will scum in the wall unless it is exposed to moisture. Where the water comes down through the wall, the salts will come to the surface and produce that efflorescence. The thing is to see that the architect puts a strip under his cornices and protects the wall.

Mr. Frank Stiles. North Haven, Conn.: Mr. Richardson just made a suggestion, which I think would be very wise for this convention to take note of. He speaks of inviting a scientific man to look into this and tell us about it. I propose that Mr. Richardson be appointed a committee and when he has found the remedy, let him claim the $100,000 reward and then divide it among the members of the Association. (Laughter.)

Mr. Yates: I understood Mr. Richardson to say a rapid watersmoking was the thing to prevent scum. That is entirely contrary to my experience, for the simple reason that if you raise the temperature you create more condensation on the clay, you get there little sweat drops that appear on the brick. The sulphur passes through, comes in contact with the water and will be precipitated on the face of the brick and will remain.

President Copeland again took the chair, relieving Vice-President Conway.

President Copeland: The discussion is very interesting, but it has been rather prolonged, and I think it can be taken up again in the lobby.

Mr. Anthony Ittner: It was prolonged on my part, because I am an old stager and I wanted to give the younger members the benefit of my experience, and I want to say now that if any one is not satisfied as to the information received, if they will write me, if I can aid them I will gladly do it.

Mr. Mayer: In response to Mr. Yates. I did not understand Mr. Richardson to say rapid watersmoking, but rapid circulation in the drying tunnels. We have taken up this matter ourselves, babes as we are in the business. This is one of our teeth. We have now a series of chemical tests under way. We have built a brick wall up against a clay bank, not a wall such as you would put in a building, with the wet clay in the back and the sunshine in front and we will see what the results will be, and I do not know but if it turns out all right, I am going after that $100,000 and we will cut another tooth.

President Copeland: If there is nothing further on that question, we will take up the next, Number 20, "What can we brickmakers do to reduce our fuel bills?" I should think the man who could solve that would be entitled to the $100,000.

Mr. C. P. Mayer: I am your man. I have a hole in the ground out of which our fuel comes, and if the devil don't make trouble at the other end of the hole, we are all right.

President Copeland: The next is Number 23. "What is a fair percentage of cost for the repairing and maintenance of down-draft kilns in the burning of vitrified ware?"

Mr. Ittner: I do not think that can be answered.

President Copeland: The next question reads, "What is the process of making fire flashed brick?"

Mr. Anthony Ittner: In our up-draft kiln about the benches we have what are called fire flashed brick. These brick are burned extra hard, and of course in burning extra hard they shrink and in burning three eighths of an inch from the inside and we have six or eight courses where the fires are the hottest, and we get what we used to call in old time parlance, paving brick.

While I am on my feet, and this may be of some benefit, I want to say in regard to the burning of patent kilns on the up-draft methods. Some years ago, all our brick were burned in our patent kilns, for six or eight courses down from the top were fire flashed brick and we culled them out. They were the very nicest brick we made, and we got rid of that in this way. It was a time when we fired our furnaces all around on both sides of the kiln. We started to firing alternately, fire say on one side and then about fifteen minutes afterward or whatever time would be between fires, fire on the other side, kept that up alternately until the kiln was finished, and we did not get our brick so hot on the top and would not get the flash. Now often the top courses of the kiln would flash, and I explained it this way. When we fired one side at a time, the impurities of the coal would enter the kiln at the bag walls, the draft in the kilns was not what it should have been and the result was flashed brick.

Secretary Randall The next question is really a part of the previous one, "Can Fire Flashed Brick be Made in an Ordinary Up-draft Kiln?" Unless some one especially desires to say something on this question, this virtually winds up our program. If the party who asked this question will turn to the reports of the previous conventions, he will find a paper or two bearing on this subject. I want to say in regard to these questions, on behalf of the Executive Committee and the Secretary, that these questions all come in to me in the course of making up our program. They are all questions asked sincerely with the view of getting information, but in a case like this where we are in haste to get through they do not really get the attention they should.

Letters from Absent Members.

Secretary Randall: This brings us to our miscellaneous business. I presume you would like to hear the telegram received in reply to the one, which according to instructions, I sent to Mr. D. V. Purington. It reads, "Message received. Thanks for it, and the spirit of true friendship that inspired it. I am doing finely and gaining in every way. Love to all, D. V. Purington." I also have a number of letters from absent members, including such faithful members as Mr. Eudaly, Mr. Dunn, of Erie, Pa., and Mr. Eggers, of Cleveland, which I will read.

MESSAGES OF REGRET FROM ABSENT MEMBERS.

Dear Secretary,

Impossible to be with you. Regret this very much.

Fayetteville, N. C., Feb. 7. E. A. POE.

* * *

Dear Mr. Secretary:

Enclosed you find check for my dues. I am sorry I cannot be with you, my daughter and I start for California tomorrow evening. Hoping you may all have a glorious good time.

Yours respectfully,

Erie, Pa., Jan. 27. H. C. DUNN.

* * *

Dear Mr. Randall, and Members of the Convention:

I regret exceedingly my inability to attend this the Twentieth Convention of the N. B. M. A. Business matters, over which I have no control, is my excuse. I have plead the court to consider my great desire to attend the convention, but to no avail, so I am still waiting for a very important case to be heard and which I have just been notified has again been postponed until the 12th. Had I known this in time, I could have attended the convention.

Please express my great disappointment to the convention. With kind regards to all, I beg to remain Yours truly,

Cincinnati, Feb. 7. W. A. EUDALY.

* * *

Dear Mr. Secretary:

The circular letters were received in good time and same have been mailed out. I regret very much to say that as matters now stand at home, I am not able to be with you at Philadelphia. I am very sorry to have to write this as it is a great disappointment to me and a trip that I had anticipated deriving much pleasure from. Please give my regards to all old friends, and may you have a grand good time.

Mr. Green and Fairchild having decided not to go would leave me alone for the trip. I miss my old friend Lower.

Respectfully,

Sergeant Bluff, Iowa, Feb. 2. C. P. HALMAN.

* * *

Dear Mr. Randall:

Enclosed please find check for renewal of membership in N. B. M. A. Mrs. Bailey and I regret that we are unable to be with you at the Annual Convention in Philadelphia this year, but my duties in Boston prevent our going, but perhaps we will be able to meet you another year.

With best wishes for your success in the interests of the Convention and with kind regards for all inquiring members, I am,

Yours truly,

W. H. BAILEY.

Boston, Feb. 5th.

P. S.—Please send us badges.

* * *

Dear Mr. Randall:—I am exceedingly sorry I cannot be with you. I had made all preparations to attend the convention in Philadelphia, but yesterday some very important matters sprung up, which required my personal attention here, consequently upsetting completely all my previous plans. I was in hopes that I would be able to get away today, but can't possibly do it. However, I am satisfied that you will have the largest and best convention we ever had, hope it will be a record breaker. While I am not with you in person, I assure you I am with you in spirit. Too bad that I cannot be with you and enjoy the few days with my old friends for a howling successful convention; those are my sincere wishes. I remain,

Yours sincerely,

F. H. EGGERS.

Cleveland, Feb. 7.

Secretary Randall: I also have letters of invitation from a number of cities including Milwaukee, Denver, Wheeling, W. Va., Norfolk, in connection with the Jamestown Exposition, a very urgent invitation from Columbus, Ohio, to come back there, a call from the Chicago Convention Bureau, and finally one from St. Louis Clayworkers, all of which will be referred to the Executive Committee, and all of which I will be pleased to read to you.

BIDS FOR THE 1907 CONVENTION.

BOARD OF TRADE, COLUMBUS, OHIO.

Dear Sir: Permit us to call your attention to the many reasons why we entertain so many conventions and gatherings in the city of Columbus:

First, its central location; second, its railroad facilities; third, its numerous first-class hotels and rates; fourth, its beautiful State buildings, parks, etc.; and fifth, its street and interurban railroads.

As Secretary of the Convention Committee of The Board of Trade, I am instructed and authorized to invite your organization to hold its next convention in Columbus, and upon receipt of a reply to this letter, I will be pleased to give you more complete and full data relative to the merits of this city as a suitable place to entertain conventions, etc.

Awaiting the pleasure of a reply and thanking you in advance for any courtesies extended, we beg to remain,

Yours very respectfully,
HENRY C. PIRRUNG, *Chairman*,
Conventions Committee, Board of Trade.
BEN H. HARMON, *Secretary.*
Care of Neil House.

Please address all communications to the Secretary.

E. L. Cook, State Farm, Mass.

MILWAUKEE CONVENTION LEAGUE.

Mr. Theo. A. Randall, Secretary N. B. M. A.:—

My dear Randall: I know that you are very busy now preparing for your convention to be held at Philadelphia. I think I spoke to you before about the prospects of our securing the 1907 convention. Do you think that the conditions are now ripe to present an invitation and urge its acceptance? Of course, as to the local situation, I do not know if it is much different than it has been before, but I feel that if the convention could be sent this way the brick manufacturers and jobbers would join and do their share. I feel quite confident that we could secure the active co-operation of the hotels in helping to defray the expenses, which, from my conversation with you before, I remember you are anxious always to keep down, ever bearing in mind the real success of a convention from a business standpoint.

If there is any information you can give me, or any suggestions you can offer as to our prospects of securing the meeting, I would appreciate it very much. With best wishes, I remain,

Yours very truly,
R. B. WATROUS, *Secretary.*

THE JAMESTOWN EXPOSITION COMPANY.

To the President of the National Brick Manufacturers' Association,
Philadelphia, Pa.—

Sir: On behalf of the Jamestown Exposition Company, we desire to extend to the National Brick Manufacturers' Association, a cordial invitation to hold the annual meeting of the Association for 1907 in the city of Norfolk.

In that year, a great international naval, military historical, and industrial exposition will be held on and near the waters of Hampton Roads, Virginia—within twenty minutes ride of the city of Norfolk, Portsmouth, Berkley, Newport News, Hampton and Fortress Monroe—in commemoration of the three hundredth anniversary of the first English settlement at Jamestown, Virginia, in 1607.

This section is the most historic on the American Continent. In ordinary times, the vicinity bordering on Hampton Roads possesses attractions to warrant its selection as a meeting place, while during Exposition period, the natural advantages will be augemented by many other attractions.

The Jamestown Tercentennial Exposition is different from other exposition, inasmuch as it will have a distinctive naval feature in a great international naval rendezvous, for which invitations have already been extended by the President of the United Sates to the Nations of the world. The military and historical features will also make it very different from other expositions.

The Exposition management will be prepared to furnish your Association with a commodious and satisfactory hall in which to hold its meetings, and if desired, recognize its presence by setting apart a special day for it.

ALVAH H. MARTIN,
First Vice-President.

G. T. SHEPPERD, *Secretary.*

WHEELING BOARD OF TRADE.

Mr. Theo. A. Randall, Secy., National Brick Manufacturers Ass'n:

Dear Sir: We wish to call your attention to the advantages of Wheeling as a convention city and hope your organization may elect to come here next year.

Wheeling is very centrally situated, being on the dividing line between the North and South, and we have a splendid railway system which would bring delegates from all sections.

The city is modern and up-to-date in every particular and has many first-class hotels whose rates are always reasonable.

The Board of Trade would be glad to give you welcome to the city and to assist in making the convention a success.

We hope you will bring this matter before your organization at the coming convention and assure all delegates that they would be more than welcome to meet next year in the Metropolis of West Virginia.

Wheeling, W. Va., Jan. 25, 1906.

Yours very truly,
R. B. NAYLOR, *Secretary.*

Thomas Roberts, Philadelphia, Pa.
Designer of Central Figure in Associational Banner.

THE DENVER CONVENTION LEAGUE.

Mr. Theo. A. Randall, Sec'y., National Brick Mfrs. Ass'n:

Dear Sir: There has been formed in Denver, an organization entitled The Denver Convention League, its membership consisting of the foremost business men of our city. Its object being to invite the attention of societies, orders and other bodies holding annual meetings to the preeminent advantages of Denver as a place of meeting. There have been held in Denver, many National Convocations, and it has been acknowledged by each and every one, that Denver is an ideal city for such gatherings.

The hospitality of the citizens of the city of Denver has always exceeded the expectations of those who have been entertained, and our glorious climate and magnificent scenery exert a magnetic influence upon those visiting our city and State.

We are desirous of obtaining some officially correct data regarding your organization, and trust that we are not trespassing upon your time and patience when we ask that you fill out the enclosed blanks and return to us in the stamped envelope sent you herewith. This information we shall use in an endeavor to secure at some future time the meeting of your organization in Denver, the Mile-High Convention City.

Thanking you for your courteous attention and trusting to receive an early response,

Very sincerely yours,
Denver, Colo., Jan. 17, 1906. W. F. R. MILLS, *Secretary.*

CONVENTION BUREAU DIVISION OF THE CHICAGO COMMERCIAL ASSOCIATION.

To the Officers and Members of the National Brick Manufacturers' Association, in Session in Philadelphia, Pa.

Gentlemen: The Chicago Commercial Association extends a most cordial invitation to the National Brick Manufacturers to convene its next meeting in this city.

It is unquestionably needless for me to refer to the great advantages that Chicago possesses as a meeting place for an organization of this kind. Her geographical location; her unexcelled railway facilities; her extraordinary features of special attraction; her ideal hotel accommodations, etc., etc., are points that insure large attendance upon convention events—the first great requisite for a successful meeting.

Within a single night's ride of Chicago, fifty million people reside. There are something like 2000 daily trains going and coming over twenty-four trunk lines centering here, thus affording the opportunity for the greater number of your members and visitors to come and return, should your convention be held here, during a single night's ride, and practically without losing a single business hour in coming to and returning from your session.

In Chicago there are innumerable means of entertaining your members, their ladies and their guests, while you are engaged in business session; and I feel certain that, if you honor us with your presence, you will realize one of the most delightful and in every way successful gatherings that your Association has ever enjoyed. May we hope for your support to that end?

Trusting that Chicago may be honored by the presence of the National Brick Manufacturers' Association during its next meeting, I am, Sincerely yours,

CURT M. TREAT, *Sec'y-Gen'l. Mgr.*
Convention Bureau.

Chicago, Jan. 30, 1906.

J. M. Blair: I move they be referred to the Executive Committee.

Seconded by Mr. Mayer and carried.

President Copeland: If there is nothing further, the convention will stand adjourned sine die.

THE ANNUAL BANQUET.

Given Under the Auspices of the Brick, Terra Cotta and Tile Association of Philadelphia.

A SPLENDID assembly of happy men and women melodious music, an excellent dinner, and eloquent post-prandial speeches, all combined to make the Associational dinner at the Philadelphia Convention an event long to be remembered by every participant. For an hour previous to entering the banquet hall "Dixie" Scott, Secretary of the St. Louis Clayworkers' Association industriously distributed among the members and guests large sized tags, which read, "Meet Me in St. Louis in 1907." It was a happy and timely conceit which provoked many complimentary allusions to the good time that St. Louis will show the members if that city is selected for the next meeting. Promptly at the time set, 8:00 P. M., which is rather unusual, such functions being delayed an hour or so, as a rule, the doors to the great dining-room of the Continental were opened, displaying an appetizing array of delicacies which were the prelude to an ample feast As the throng marched in their eyes were fairly dazzled by a brilliant floral and electric display. Back of the head table was suspended the pleasing legend, "WELCOME N. B. M. A." in letters three feet in height formed by incandescent lights and surrounded by a mass of green foliage. The tables were decorated with cut flowers, and Old Glory and the new Associational banner formed a pleasing part of the picture. Every available foot of the immense dining hall was occupied—nearly 500 plates were laid—and it seemed as if many would have to be turned away or accommodated in the adjoining ordinary, but luckily a meeting of the Mystic Shrine and other counter attractions had tempted many to other pleasures so that nearly all were accommodated, and it is needless to say were treated to a rare and pleasing entertainment. The Rev. E. E. Burris said grace, and the onslaught was begun on the following:

MENU.

Blue Point Oysters.
Snapping Turtle, Continental.
Radishes. Celery. Olives.
Small Pattie of Lobster, Newburg.
Darne Red Snapper, Hollandaise.
Pommes Nouvelle.

BRICKMAKERS' PUNCH.

Fillet of Beef, Pique, Bordelaise.
Green Peas.
Lettuce and Tomato Salad.
Assorted Fancy Cake. Vanilla Ice Cream.
Roquefort and American Cheese.
Fruit.
Coffee.

Toastmaster Huhn: Ladies and Gentlemen of the National Brick Manufacturers Association of the United States of America:

It becomes my duty to greet you on this, the Twentieth Anniversary Associational Dinner and while it is not to be my pleasure to be with you during your sessions owing to my legislative duties, yet I have every reason to believe that the ladies and gentlemen who comprise the various committees of the local organization have made ample arrangements for your welfare, comfort and entertainment during your sojourn among us so that at the close of your deliberations you will no doubt, return to your homes carrying with you many pleasant recollections of the hospitality of Philadelphia and her citizens.

As the first speaker of the evening I desire to introduce one who. in the troublous times in Philadelphia when our Mayor was waging battle with high and low in his efforts to place Philadelphia on a high plane to which her name justly entitles her, there was none more staunch in frindship, none more untiring in his efforts to bring forth these results than our companion and friend, that City Father, Thomas F. Armstrong, who will respond to the toast, "Philadelphia's Welcome."

PHILADELPHIA'S WELCOME.

By Thomas F. Armstrong, Philadelphia.

Mr. Toastmaster, Ladies and Gentlemen: Our toastmaster is a modest man, for while he is occupying an extraordinary position at Harrisburg, he is satisfied that things are going on well here. I find on my card at my plate my initials given as I. T. Armstrong. Now, that is a mistake; I never was IT, and I am not to-night. We have here our Mayor, in whom, I am sure, you are all as much interested as you are in our great city. We have our great publisher, Mr. Charles Emory Smith, and our friend, Billie Sayward, and our good "Uncle" John Stevens, who, like Tennyson's brook, goes on forever; so I think you have enough to keep you going until about 2 or 3 o'clock. I want to say for Philadelphia that when, some years ago, it was my good pleasure to be traveling abroad I went 100 miles out of my way to see the place where our Pilgrim Fathers embarked from in Holland. I hope every visitor in this old city will go down to Independence square and stand in the shadow of the old State House, whose walls rang with the speeches of those old partiots who did so much to make this country famous. Take in the old Liberty Bell. This, of course, is but a repetition of what you have heard many times. It was my good pleasure to go West with that bell on its recent trip, and I saw the enthusiasm which greeted it everywhere. I saw an old, gray-haired woman come up and lay her hand on the bell, and she said, "My husband I gave to my country, and I have two boys; it can have them, too." I saw an old man come up and lay a coin against the bell and say, "I am going to send this to some friends over in England and tell them we whipped them once and we can do it again." I hope every man here will go down and take a look at the old bell; take a look at the Betsy Ross house, where that patriotic woman made the first American flag—the flag of a country on which the sun never sets and the flag that has never been lowered in defeat. (Applause.)

Toastmaster John R. Huhn, Philadelphia.

I want to say one word in regard to our Master Builders' Exchange. We think we have, putting it modestly, the best exchange in the United States. That reminds me of a young lawyer who had recently hung out his shingle. A man came into his office and said: "I want to hire the best lawyer in this town." "Well, you can have me," said the young man. "How can you prove you are the best lawyer?" "You don't have to prove it," was the reply; "I admit it." (Laughter.) So with the Philadelphia Builders' Exchange. You don't have to prove it; we admit it. We have the only Democrat in the city of Philadelphia as a member of the Builders' Exchange. (Laughter.) He is a Democrat 364 days in the year and the three-hundred-and-sixty-fifth day he votes the Republican ticket. (Laughter and applause.) He has an idea that Jersey cider made from the Jersey apples beats the choicest of wine, and he inspired us to buy two barrels of Jersey cider. We have these barrels on tap at the Exchange, and we hope you will all come down there, and there is no limit to the cider but your capacity. So come down in a body or come singly, and we will accommodate you. One little story in conclusion. You are only going to be here a short time and we want to do everything we can to make you stay pleasant. A man got a wire from the West, "Your mother-in-law is dead. Shall we embalm, bury or cremate?" He telegraphed back, "Do all three—embalm, bury and cremate. Take no chances." (Laughter.) I want to say we give you what we Philadelphians call an Irishman's welcome, "Come in, hang your hat up behind the door, but use the whole house." The whole town is yours, and I hope when you go away you will be impressed with our city, the best city in the country—be impressed with our buildings and our brick manufacturers, our progress in everything that is good, and that you will go away feeling that in Philadelphia you had the best convention, and go away from here not only better brickmakers, but better men and better women, and, too, that we Philadelphians will be better for your having been with us. (Applause.)

Toastmaster Huhn: Ladies and Gentlemen: The next speaker is one who needs no introduction, whose name is familiar, not only in every home of this great Commonwealth, but is being heralded from Atlantic to Pacific as a champion of reform. It affords me great pleasure to introduce to you the Mayor of Philadelphia, the Hon. John Weaver. (Loud Applause.)

ADDRESS OF HON. JOHN WEAVER.

Mr. Toastmaster, Ladies and Gentlemen, and Little Boys: I have paid you two visits to-day, and surely one was enough for you. If you really wanted me, you knew the best way to get me when you captured more than one-half of the family, and it was necessary for me to come to escort her home. American womanhood! American motherhood! God bless the American mothers. (Applause.) Her smile greets the husband and the children as they leave home in the morning to go to their daily toil or their school, and her smile is again the magnetic beacon to welcome home the weary toiler or children when they return at the end of the day. Surely we must appreciate American womanhood, and it does my heart good to see you brick makers have your wives with you sitting at our banquet tables. How many times during my term of office have I lifted my voice to urge the men who wanted nothing but stag banquets to reform and bring their wives and sweethearts with them, because, as I have said, you never know what a real banquet is until you have the ladies with you.

Mayor John Weaver.

I have been engaged in a very interesting duty to-day. The United States has reached out and become a great world power, and she now has millions of people under her charge in the Orient, and to-day it was my pleasure as executive of this city to extend a welcome and go over the city with a party of Chinese. Do you know that the Oriental question presents a wonderful question to the American people? Fifty-two years ago, when Commodore Perry got the first commercial treaty from Japan, what was Japan? Recognized the world over as an uncivilized power, she met and crushed a civilized power. A small power of less than 30,000,000 of people, now perhaps only 40,000,000 souls, one-half the population of the United States, but after fifty years of western civilization see what it has done for Japan. When that little country, the country of little men, defeated the greatest military despotism of the world, think what China has done, and what China could do. Instead of a little country less than half the population of the United States you have that gigantic country with her teeming millions, almost ten times the population of the United States, to consider. Let us ask the question, what will this Chinese power become if they adopt the civilization and customs of the Western powers. I tell you I think China will adopt that Western civilization because at this time she has 15,000 of her young men, over 10,000 at home and 5,000 here in universities and industrial institutions, and I saw Chinese to-day saluting these Chinese officials in the Baldwin locomotive works. I think in a very short time there will be many more sent to this country, and I believe they are going to adopt in that country, as Japan has, the Western civilization. What a tremendous power she will be in the world! I tell you when that time comes the United States will never have Chinese exclusion, unless there is an exclusion that applies to other countries in the world, because China will become so powerful that she will be one of the great powers of the world and she will see to it that no country in the world can ever frame her laws so as to exclude her citizens where citizens of other countries are permitted. But these are problems for lawmakers and the generations to come. They probably will not trouble us. I wish I could talk to you further along this line, but it is a problem that will be met and solved by our children and their children long before the United States has a population of 500,000,000—and I suppose that time will come if our President has his way and there is no race suicide. (Laughter and applause.) I suppose the time will come, but it will be many, many years, even at the rate of progress that has been going on in this country for the last twenty-five or thirty years. But they are problems that our children and our children's children will meet and be able to grapple with when they do meet them.

I was very much interested this afternoon in Mr. Fiske's response to my address of welcome in his quotation of Adams' speech in Independence Hall in favor of the Declaration of Independence. How clearly he saw into the future. And I have sometimes thought that if we could, every one of us for at least one or two days during the year, go back to the history of those revolutionary days and see with what toil and trouble and what sacrifice of life and limb was bought this great country of ours, and then ask ourselves the question whether it was not our duty to give a small portion of each year to our duties as American citizens, I tell you there would never be any question of misrule in American municipalities if every American citizen in that municipality recognized his duty as an American citizen. (Applause.) After the toil and sacrifice and trouble of our fathers in the revolutionary days, is it too much to ask a citizen of the present generation to spend twelve hours in looking after the primary and subsequent election of the men whom they want to represent them in public positions? (Applause.) I think the time is coming when every American citizen is going to recognize more clearly his duty as an American citizen, and if he does, then the future of this country is bright. I am sure that the city of Philadelphia is better, not from anything that I did, but from what the people did, because I do not think for a moment that the Mayor of any city can do anything to reform a civic government unless the people are with him (applause), and it was the good people of the city of Philadelphia that caused the revolutions of last May, and it was the good people of this city that kept up the fight until the final victory in November. I cannot resist the temptation now, in the presence of this magnificent assembly, to add a tribute of respect to these men, these leading citizens of Philadelphia, who have constituted during this time the Mayor's advisory board. These men, representing almost every walk of life in the city, without any desire for personal gain, with a self-sacrificing spirit have devoted a part of every week to considering with the Mayor the great public policies that constituted the civic government of Philadelphia, and one of these men you have on your list to-night. I refer to the Honorable Charles Emory Smith, who represented this country at the Court of Russia. (Applause.)

Now, ladies and gentlemen, I have taken more of your time than I should have done. Mr. Armstrong called attention to the fact that there were many speakers, and if there was too much time taken up you might not get to bed to-night, so I shall repeat my wishes that I made this afternoon, that you shall have a most successful convention; that when you shall leave this city, you will carry with you some very pleasant recollections of the city, which I can not help thinking is the greatest city in the country. (Prolonged applause.)

Toastmaster Huhn: The next speaker needs no introduction to the builders of America, having for years served them faithfully and well as the Secretary of the National Builders' Association, and now as Secretary of the Boston Master Builders is in close touch with the building industries of the Hub about which we all revolve. His years of service is attested by his venerable appearance,

An old time face—an old time chum
Who rises from the grave to come
And lure me back along the ways
Of time's all-golden yesterdays.

It affords me pleasure to introduce to you William H. Sayward, of Boston, Massachusetts, who will respond to the toast, "Our Yesterdays." (Applause.)

OUR YESTERDAYS.

By Wm. H. Sayward, Boston, Mass.

Mr. Toastmaster, Ladies and Gentlemen: I suppose that anyone receiving the intimation in the words that you have just heard from the toastmaster, that I would speak to the toast, "Our Yesterdays," and the little couplet from one of James Whitcomb Riley's poems,

"Of time's all-golden yesterdays,"

would think somewhat as I did, that he was considered a back number. (Laughter.) I am not sensitive at all, and I hope to show that back numbers are sometimes quite valuable. For instance, a week ago a back number of an old edition of Shakespeare sold for $9,000, and I imagine that some very old back numbers of the Philadelphia Inquirer might bring $4,000 or $5,000. So I feel somewhat mollified, as I dwell upon the theme, in thinking I am a back number and am able to recall some of the events which the younger men, men of the current numbers, cannot recall at all. It is worth while to be a current number on some occasions, but on others it is well to be a back number.

As I thought upon this toast, "Our Yesterdays," it grew upon me and I conceived that there could hardly be a more inspiring theme for anyone to think upon than "our yesterdays." We do not often reflect that the yesterdays are the only things we really have. To-day is a new thing; we think we are enjoying it, but we do not grasp it—it eludes us at every stage of the imagination. But the yesterdays are safe beyond any breach of time; they spread their banners wide from shore to shore. They lift their voices high in every land; they are our only possessions, the only true thing which we have in this strange life of ours.

I started to make some notes, and I brought them with me, but I found it was impossible, Mr. Toastmaster, to cover the wide range which "our yesterdays" open up before us with that faculty of memory which we none of us understand, but all recognize as the most mysterious in this strange process which we call our lives.

Is it to be the yesterday of our nation? Here is this historic city, and in the historic city, from which I come, we have been told over and over again in the last few hours what it must mean. These yesterdays of our nation! Those of my age have a yesterday when the black man was a slave, have a yesterday when, through the turmoil and record of blood, not only was the black man lifted up, but the nation itself was raised higher than it ever was before. The regeneration of the great South stands as a yesterday above the awful price that was paid, for that yesterday has been worth what it cost to bring into the Union and into existence that strong and mighty force which now throbs more ecstatic than any other part of the Union.

Is it to be the yesterday of our State? You are here from different States, and you have heard since here the praises of this State, but would any of you swap this State for your own? No, every one feels that the yesterday of his State is inscribed on the banner of the Union, high and broad, and wide and deep, so it means to him who comes from each of the States, all that this great and glorious old State means to its citizens.

Is it the yesterdays of our cities? This city here, as we know, is one that compels all hearts in admiration, but we come from all over this country, and this same writer who wrote this little couplet which introduced me, in a little poem has said, "The little town of Tailholt is good enough for me." So whether we come from Philadelphia, or we come from Boston, or even from Cincinnati, we each feel that the "little town of Tailholt" is good enough for us, and it is because of our yesterdays. It is not because of the everlasting now, because we do not know what the everlasting now is producing, for we are in it. We can not tell what the future will make, but we do know what the yesterdays have been.

Is it the yesterdays of our Association? For twenty years I have been familiar with this Association, and coincident with it the National Association of Builders intimately related and allied to this Association representing those who take the material that you furnish and putting it together into the structures which make for the habitations of man. The yesterdays of our Association? This Association — what was it, twenty years ago? If it had been said then that six hundred people, men and women, wives and sweethearts, would gather together here today, it would have seemed incredible. That which has made it possible is the yesterdays of the National Brick Manufacturers' Association, not its future.

But I know well enough what the secretary and the toastmaster had in mind when they asked me to speak of yesterdays. They know that I have been familiar with the men who have made up this organization and others of a similar character closely allied to you. As my eye glances along the yesterdays, I find constantly increasing gaps in the line. The "old-time friends and old-time chums" who once sat with us around the board, into the vanishing yesterdays they have gone — no, not gone, for they are enshrined where they can never die, and those of us who have passed along the stream and have waited, and listened, can still hear their voices mellowed by time's remembrance.

In life's late afternoon while cool and long the shadows grow,
We walk to meet the night which soon shall shape and shadow overflow.
It can not be that they are far,
Since when at night the angels are,
And when the sunset gates unbar, shall we not see them waiting stand,
And clear against the evening star, the welcome of their beckoning hand.

(Applause.)

Toastmaster Huhn: In the next speaker we have a man whose energy and well recognized ability both as a public orator, an eminent statesman and a journalist has gone far toward placing this country on the high plane to which it is so justly entitled. I have the great pleasure to introduce to you at this time the Hon. Charles Emory Smith, who will respond to the toast, "The American People are True." (Applause.)

THE AMERICAN PEOPLE ARE TRUE.

Hon. Charles Emory Smith, Philadelphia, Pa.

Thos. F. Armstrong, Philadelphia.

Mr. Toastmaster and Ladies: I am very glad to meet this great assembly of representative men who have come here from all parts of our great common country, and I am glad to see that you have brought with you the ladies, to whom such gallant reference has been made here tonight. I once heard Henry Watterson, at a banquet in the city of the gentleman who has just spoken, say that he had come without his wife; that he had come for pleasure. Now he did not mean that; he was just joking. Rather, you come on your honeymoon. That reminds me of a story. They were on their honeymoon; she had been out shopping; she returned to the Continental Hotel; she was sure as she tripped along the corridor that she knew her own door. She tapped gently; no response. She tapped again; no response. She said, "Honey, honey, let me in"; no answer. She said again, "Honey, honey, let me in"; no answer. She said once more, "Honey, honey, honey, it's Mabel, let me in." Then came from the interior a stern and severe voice, "Madam, this is not a bee hive; it is a bath room." [Laughter.] I have no doubt but that bath room was beautifully tiled with tile from the factory of some member of this Association. I am sure it was a magnificent specimen of the ceramic art.

A gentleman who was discussing the action of another gentleman in a little game they had been having, said, "I don't find fault with him for carrying an ace up his sleeve, but I do complain when he claims that God put it there." [Laughter.] Gentlemen, you carry your aces with you. You have wisely brought them here tonight, and certainly no one will find fault with you when you say, as I am sure you justly may, that God put the aces there. [Applause.]

Our honored mayor, who addressed you a few moments ago with that modesty which is characteristic of him, and who has always showed that true manhood and honor, said he could have accomplished nothing in the work that has been wrought in this city in the last year had it not been for the people. There may be a measure of truth in that, but I want to tell you that it is no less true. There is, perhaps, a greater truth in the declaration that the people could not have accomplished anything but for Mayor Weaver. The people are true, and sometimes a mayor is true, and we have found in this city the full and supreme importance of having in the executive chair a man who is conscientious and perfectly fearless.

The American people are true! The sentiment which you have me to speak to tonight says they are true, and never have we had a more spectacular demonstration of that truth than in our own city this last year through which we have passed. The true keynote of 1905 is in the revelations of wrong which have been made before the magnificent demonstration of right on the part of the people. We have been shocked at the revelations of wrong in high places; we have been startled by the evidences of the perversion of power in the unwarranted greed of individual gain, and we have sometimes thought that the people were indifferent and careless. We have sometimes felt like hanging our heads in shame at the vast evidence of wrong which was striking at the social or corporate life of our Nation, but that indifference, which seemed to prevail for a time, was only apparent, and the magnificent uprising of the people all over the land was swift in its effect and mighty in its upheaval and fills us with pride and with new courage, that is the talisman of our city and of our nation.

This upheaval was due to the good women, to the vigor of the press and the pulpit against the iniquity, and there swept over this land a wave of public indignation which made a high-water mark of public appreciation. This is the true touch-stone of American character.

My friends, we have come to a new ideal, and that ideal is a square deal. We have come to a man, and the new man, whose name is across the sky in blazing letters, is the man who stands for the people. You see him in Theodore Roosevelt. [Prolonged applause and cheers], who stands for the square deal between favoritism and the people, between nation and nation, and he is the highest evangelist of the true American spirit, and the great peacemaker of the world. [Loud applause.] You see him in Wm. T. Jerome, who single-handed, without any party behind him, steps forth into the ring alone, relying on the popular spirit of a pure ballot, a courageous man, and is elected against all parties in the great city of New York. [Applause.] You see him in John Weaver [loud applause], who stands out against the most formidable political power in all our land, backed, as he himself says he was, by the people, succeeded in redeeming our city of Philadelphia and starting us on a new cross of civic righteousness. Surely, as we look at these men with all that they represent, with their high ideals and their spirit, we may say with the poet:

Rev. E. E. Burris, Philadelphia.

God give us men! A time like this demands
Strong minds, great hearts, true faith and ready hands;
Men whom the lust of office does not kill;
Men whom the spoils of office can not buy;
Men who possess opinions and will;
Men who have honor,—men who will not lie;
Men who can stand before a demagogue,
Men who damn his treacherous flatteries without winking!
Tall men, sun-crowned, who live above the fog
In public duty and in private thinking;
For while the rabble, with their thumb-worn creeds,
Their large professions and their little deeds,—
Mingle in selfish strife, lo! Freedom weeps,
Wrong rules the land and waiting Justice sleeps!

We have found such men; we have claimed them during these later months. We have found a regenerated citizenship — shall I rather say a reinvigorated citizenship, with an awakened conscience that is alert, alive and imbued with high moral ideals. The whole tone of our American life will be better hereafter for the uprising all over the land through this last year. We shall have better business and higher civic sense, and we can look forward now with new hope to our free institutions and the future of our great and beloved country. [Prolonged applause.]

Toastmaster Huhn: It is my pleasure at this time to introduce to you one of the faithful workers in the cause of the American Ceramic Society whose youth should not lessen the esteem in which we should hold his words of wisdom on what the future may hold for us. It, therefore, affords me pleasure to introduce to you Edwin C. Stover, of New Jersey, who will respond to the toast, "Our Tomorrows." (Applause.)

"OUR TOMORROWS."

By Edward C. Stover, Trenton, N. J.

"Where are they—the afterwhiles—
Luring us the lengthening miles
Of our lives? * * * *
Here beginneth space,
O, far glimmering worlds and wings,
Mystic smiles and beckonings,
Lead us, through shadowy aisles,
Out into the afterwhiles."

Show me a man who is satisfied with his past record and what he is doing now, who does not hope to accomplish much greater things tomorrow, meaning in the days to come, and I will show you a man not worthy of the twentieth century.

When we look about and behold the vast strides that have been made in every sphere, and compare today with twenty, yea, ten years ago, we are prone to contemplate the future with misgivings, but this should not be, for we have available all the modern machinery and appliances, practical and scientific data, including improvements in transportation and the greatly enlarged markets and increasing demand for our product.

I firmly believe we are now at the threshold of the era of our greatest prosperity, and we need have no fears for the coming generation, with available such opportunities as are afforded at the department of clay working and ceramics of the Ohio University, so ably directed by one whom Dr. Pukall, of Bunslau, Germany, has properly titled "The Seger of America" (Professor Edward Orton, Jr.), also supplemented by a similar department at the Alfred University, New York, under Professor Charles F. Binns, and one at Rutgers College, New Jersey, under Professor Chas. W. Parmalee, and another just being added to the University of Illinois to be directed by Ross C. Purdy. Surely we have every reason to hope and believe that in the near future *far* greater things will be accomplished than ever has been. Brick and ceramic products generally will not be in the rear.

An energetic salesman, in pressing his claims for brick, asserted that the building would last forever, and after that you could use the brick over again in another building. (Applause and Laughter.)

Toastmaster Huhn: We have with us tonight one known to you all, one who stands prominent in the affairs of the Master Builders Association, one ever willing to lend the attentive ear to the plaints of those well seasoned in the affairs of business, and equally ever ready to lend a helping hand and give a word of advice so well founded, to the youngest who are just beginning to wrestle with the problems that confront them in their business undertakings, one whose affability, whose kind-heartedness, whose generous spirit has earned for him the name of "Uncle John." Ladies and Gentlemen, I introduce to your respectful attention Mr. John S. Stevens, President of the National Builders' Association, who will respond to the toast, "The Master Builders." (Applause.)

THE MASTER BUILDERS.

John S. Stevens, Philadelphia.

Mr. Toastmaster, Ladies and Gentlemen: The toastmaster has told me that I must confine myself to about five minutes' talk. That reminds me of something that happened some years ago. I had been abroad, spent a year and a half in Europe, and a short time after I came home I met one of my brickmaker friends on the street, and he said, "Uncle John, I am very glad to see you. When did you get back? You have been gone a year and a half. Now, I have five minutes to spare; come and tell me what you have seen." [Laughter.] Now, if you want me to tell you all I know about the Builders' Exchange, in the short space of five minutes, it is impossible. But I will say this: Many years ago, a half century ago, when I first started out in the business life, I found certain conditions confronting me. I found that the building mechanic was supposed to walk on a considerably lower plane than did the professional man, the architect, the manufacturer and the merchant. I had not been brought up that way, and the question arose in my mind, What must I do? Must I leave this profession and go into another, or must I use my efforts to bring this profession up to the plane of these others? I had learned to love the work I was engaged in, and I remained in it. I have worked faithfully and I have succeeded in my own way in lifting in the social scale the building mechanic. These being my sentiments, you can imagine how gladly I welcomed the call that was issued from Boston some twenty years ago, when I met with a number of gentlemen from different cities of our great country and then and there organized the National Association of Builders, and it has been my privilege with them to work and to labor.

Why should we not occupy that plane I speak of? Have you ever thought of the great interests we represent? Do you know that the houses which we build and the structures which we erect represent more wealth to this great nation than any other business? Recently I have been looking over some statistics, and the building statistics taken from official documents in twenty-six of our cities show that there was $528,186,142 spent upon buildings, and if that was spent in twenty-six cities, how much would be spent in the whole nation? That was from statistics given by Mullhill, one of the best authorities, and these were taken from the interests of 1870, thirty-six years ago. So you can imagine how it was increased since then. He says that the statistics show that we had not less than $12,500,000,000, and he tells us all about these things. And you can get them for yourself if you are interested.

Now, gentlemen, we of the building profession handle and expend these moneys. Why should we not be self-respecting and why should not others respect us? The time is past when with hat in hand we enter the architect's office. We go there, gentlemen, on their level and we are going to keep on in that way. You ask me what good the Builders' Exchange has accomplished, and I càn hardly mention them all. We have our legislative committees in our Builders' Exchange, we have our Arbitration Board, our Advisory Board, we have our trade schools, of course, and in these things we are doing lots of good.

I look around this board and see faces that I have not been accustomed to seeing at the banquets I have attended. I see the women — God bless the women. We build your houses, they build your homes. [Applause.] We lay your foundations deep and strong and put up the structures; they lay the foundation of character, and build upon it the characters of our children that are to be the future men and women of this great country. While we do our work they do theirs. God bless you women, and may you keep on in your good work. [Applause.]

Toastmaster Huhn: I take pleasure in introducing to you this evening one, for whom I have the greatest respect and admiration, a young man who, by the force of his own labor and ability, has risen to an enviable position at the Philadelphia Bar, and by reason of this, was chosen one of the City Solicitors, which position, he has occupied with credit to himself and the people of Philadelphia. I therefore take great pleasure in introducing my friend and neighbor, William H. Wilson, Esq., who will respond to the toast, "This Country of Ours." (Applause.)

THIS COUNTRY OF OURS.

Williams H. Wilson, Philadelphia, Pa.

Mr. Toastmaster, Ladies and Gentlemen: It is with considerable misgiving that I arise to respond to a toast so broad in its scope, so extensive in its meaning; but the panorama which passes before our view is sufficient to excite wonder, were we to permit our minds to wander back to the early days when the seed of a great nation was sown in the tyranny of the mother country. If we could live for a moment through the vicissitudes and trials of the Continental time, through the establishment of the nation; through the successful solution of the grave problems, both social and political; through the dark days of the rebellion, when father was pitted against son, when brother fought brother, when the very foundation stones of our government trembled; and then on through that period of expansion when we pruned and developed, and strength was added to strength and power was added to power, until today we stand forth the foremost nation on the face of the globe. (Applause.)

In all this vast cycle of events, the underlying principle, the ever-abiding incentive is one identical and the same, and that is a firm and bold resolve to do what is right ourselves and see that others do likewise. A resolve that had its inception not in personal vanity, not in personal aggrandizement, but in the natural human love that animated those patriots who stained the snow of Valley Forge with the blood that oozed from their bare feet; the same love that filled the hearts of those heroes who donned the blue, shouldered the musket, and marched to the front in 1861; the same love that filled the hearts of those men who followed Sherman in that memorable march from Atlanta to the sea; the same love that filled the hearts of the men who followed the fortunes of "fighting" Joe Hooker in the battle above the clouds at Lookout Mountain; the same love that filled the breasts of the men with Grant at Appomattox, and for ever sealed the fate of an imperishable Union; the same love that filled the soul and sprung from the breast of that noble mother in a little town in Illinois, whose husband and six sons had fallen on the field of battle, and who upon the second call for troops took her seventh and last child by the hand and gazed into his eyes and with the tears streaming down her cheeks, said, "My son, you are all I have; your father and six brothers have fallen in the noble cause. It was to you that I expected to look in my old age for comfort, but your country needs your services. Go, therefore, and be an honor to the name that you bear." It was the same love that caused the American people to harken to the cry at their very door when a race downtrodden by a hated, arrogant and decadent nation, a race bent with the burden of excessive taxation, a race that knew all the hardships of life and none of its luxuries, called out to us to help them break the shackles from their limbs and set them free. The same love that flowed through the veins of that most magnificent specimen of American manhood, Theodore Roosevelt, when he marched at the head of his noble band up San Juan Hill and placed the banner of freedom in the soil. (Applause.)

I tell you, gentlemen, it is a great thing to be an American, and it is a greater thing to be an American citizen. We have every cause to be proud of our country. We have every cause to honor that symbol that stands for the starry banner and all that it implies: truth, honesty, integrity and sincerity, and as I look at that beautiful banner I think of those words:

Cyrus Chambers, Philadelphia.

"Shall it ever come down, ever come down,
From the heights where they placed it o'er castle and town?
Answer, O patriots, stalwart and true,
I ask in all honor, What shall we do?
Do? Hold it for ever o'er castle and town.
It shall never come down, never come down,
The flag of man's freedom shall never come down.

"Pure white like a lily, red like a rose,
Blue, starred like all heaven, wherever it goes.
God's blessings go with it to glorify men;
It floats o'er yon isles. Shall we fold it and then
Fold it? No, hold it o'er castle and town.
It shall never come down, never come down,
The star-spangled banner shall never come down."

(Loud applause.)

Toastmaster Huhn: The gentleman whom I am now about to introduce to you comes from a State which has furnished more Missionaries than any other in the Union for the cause which he represents. Being one of the chief officers of the American Clay Machinery Company and also of the Machinery Manufacturers Association. It is my pleasure to introduce to you Lewis W. Penfield, of Ohio, who will respond to the toast, "Our Missionaries." (Applause.)

OUR MISSIONARIES.

By Lewis W. Penfield, Bucyrus, Ohio.

Mr. Toastmaster, Ladies and Gentlemen: The word "missionary" instinctively suggests the preacher and the heathen. You will agree with me that there is no one present who would have the temerity to say that our "knight of the road," our commercial traveler, possesses any of those characteristics which are supposed to distinguish our friends of the cloth. I am equally certain that you will be unable to find among the manufacturers of clayworking appliances, whom I represent, any one who would care to hint at this time that a brickmaker is a heathen. Right here permit me to disclaim all responsibility for the language of my toast and its suggestiveness.

I deem myself fortunate, ladies and gentlemen, in having been chosen to respond to this sentiment on this delightful occasion. When our worthy secretary telephoned me that he had selected me for this honor, and stated that he wished me to speak to the toast "Our Missionaries," I feared he had mistaken my vocation. I had always supposed that my membership in this Association at least implied that I was a brickmaker. I had managed a brick yard, and as I had managed to dispose of it to another fellow, thought I had managed it well. Our secretary's letter confirming our conversation dispelled my fears on this point by explaining that he had chosen me as a representative machine man to talk to you about the trials and triumphs of that long-suffering and ofttimes unappreciated class of good fellows, whose chief aim is life is supposed to be to beguile you into adopting new appliances by which better and cheaper building materials may be added to the world's wealth.

Our commercial travelers — what will you do with them? Welcome them, encourage them, give them the glad hand, a cordial hearing. It will be accepted as a sign that you are indeed not a heathen. All advancement in material things is in their hands. The achievements of the future are theirs. They are our vanguard, our honored representatives, those who strengthen the ties between us and our clients They bring to you the fruits of our labor and invention and induce you to adopt them. The best and newest in the field of invention is none too good. Don't, I beg of you, grant your favors grudgingly like that old citizen in a country village who, on having a subscription list handed him, to raise a fund toward purchasing a new hearse for the town, thus attempted to excuse himself: "I paid five dollars for a new hearse forty years ago, and me and my folks haven't had the benefit of it yet." (Laughter.)

W. D. Richardson, President-elect American Ceramic Society, Columbus, Ohio.

A philosopher has wisely said that he who makes two blades of grass grow where but one grew before is a benefactor. What word, then, shall describe the genius who at once teaches his patron how to succeed and at the same time makes his employer succeed by the business he brings? This the conscientious salesmen are doing every day. Our representatives understand that a satisfied customer is twice a customer, and they rightly demand that we shall protect them from such embarrassments as that of the grocer who had a package of sugar returned with a note from his patron stating that it contained too much sand for table use and not enough for building purposes. (Laughter.)

In the good old days when some of us were boys, if the brickmaker desired to build a factory, he had to evolve the design of building, the arrangement of machinery, and the selection of equipment from his own brain with, perhaps, such suggestions as he could obtain from a neighbor who had had no broader experience than himself. How changed are the conditions today! You have but to express the wish and there will be laid upon your desk a factory design and specification which will incorporate all the conveniences and labor-saving appliances which have resulted from the design, construction, equipment and operation of a hundred modern plants in your line. This is the contribution of the machinery manufacturer to progress in the art.

In those former days the makers of clayworking machinery were not accredited with being so pious as to send out missionaries seeking converts. They might have been truthfully charged with sharing the feeling of General Sickles, who while strolling about the lobby at the Capitol in Washington during the time a certain river and harbor bill was under consideration, addressed his colleague from New York State with: "Tracey, I wish you would come inside the House a minute. I am going to make a motion." "What's your motion?" inquired Tracey. "I am going to move that the chief of engineers be required to make an estimate of the cost of moving some of those Western towns near the rivers out there. It's proving too expensive to run the rivers to them." But our feelings of philanthropy became so great and our desire to benefit the clayworking by introducing our wonderful inventions became so all absorbing, that we, too, finally "got the habit," and the best men, capable, experienced and thoroughly up in every department of the industry, are now awaiting the opportunity to serve you at your own door. They will be delighted to discourse fluently about hot air, waste heat, exhaust flues, feeder ducts, disc fans, blowers, exhausters, dryers, cars, elevators, hoists, automatic cutters, engines and motors; and will ask you to purchase a large supply of blue sky, otherwise known as blue prints, and a plant layout that will make your competitor feel small, and your bank balance look small.

May we ask you to have faith in our missionaries, to believe them to be honest, to place yourselves in their hands? Will you follow their advice? Of course you will, and when yo do purchase the machinery they recommend, you will not disregard the instructions they give for its use. In the days when the country was new there was an old hunter in the State of Michigan who frequently lost his way. He finally procured a pocket compass, and its use was carefully explained to him. Shortly afterward he lost his way again, and lay out all night as usual. When he returned, he was asked why he did not travel by his compass. He did not dare to, he said. He wanted to go north, and he tried to make the thing point north, but it wan't no use. 'Twould shake, and shake, and shake around, and point southeast every time. (Laughter.)

Willingness to pay full value for an article will be duly appreciated by these missionaries of ours. It is related of Judge Clark, of my native county, that on one occasion he called at the office of Counselor Wood of the county seat, who had a considerable practice in bankruptcy, and said: "See here, Wood, I want to know what the practice is in such a case as this in bankruptcy." Wood straightened himself up, and, looking as wise as possible, replied: "Well, Mr. Clark, I generally get paid for telling what I know." Clark promptly put his hand in his pocket, drew forth a dollar, handed it to Wood, and said: "Here, tell me all you know, and give me the change."

I would have you bear in mind also that supply and demand does not always regulate the price of a commodity. George the First, on a journey to Hanover, stopped at a village in Holland, and while horses were getting ready for him, he asked for two or three eggs. They were brought, and charged at one hundred florins. "How is this?" said the king, "eggs must be very scarce here." "Pardon me," said the host, "eggs are plentiful enough, but kings are scarce."

Simply because we think our missionaries are just about "the smoothest thing that ever happened," do not fall into the too common error of judging that they are chosen for their smoothness alone, or for their ability at sleight of hand, or for their personal magnetism. Open your hearts to them, call upon them when in trouble, give them the fullest opportunity to serve you, or to "deceive" you. A man by cuteness, by cunning, by scheming or dishonesty, only sets the trap into which he will ultimately fall. This reminds me of a shop-keeper who purchased of an Irish woman a quantity of butter, the lumps of which he weighed and found them wanting. "Shure and it's yer own fault if they are light," was the ready reply to the complaint of the buyer. "It's yer own fault, sir, for wasn't it with a pound of yer own soap I bought here that I weighed them?"

Your inclination, I fear, is more aptly illustrated by the incident of the canvasser who said: "I tell you, my friend, you have no idea of the hard work there is in this business. It is either talking or walking from morning to night." "Beg pardon," replied his victim, "I have a very distinct idea of the talking part of your program; now please give me an exhibition of the walking part."

Just a word to our missionaries, many of whom are with us tonight. Have a mission. Let it be one worthy of your ambition. Pursue it honestly. For your highest success it is necessary that you be industrious, rich in information, wise in knowledge of books and men. The field is a large one, and the work exacting. It is a trial of patience, integrity and vital force, often bringing silver of locks and furrows of care by its busy energy. Be encouraged by the thought that "the wise and active conquer difficulties by daring to attempt them," while "sloth and folly shiver and shrink at sight of toil and hazard, and make the impossibility they fear." "There is a tide in the affairs of men which, taken at the flood, leads on to fortune." That tide is opportunity. It is opportunity to that man alone who is able to seize it while it is yet a fleeting surprise. This is daily exemplified in the life of a salesman.

A New England clergyman, having allowed his church to get into a bad stat of disrepair, set about restoring it. He commenced with the sounding board over the pulpit, and, after putting it right, he called in his coachman with a view to testing it, and made a speech from the pulpit. "How does that sound, James?" "It sounds very well, sir. I heard every word of it," replied the coachman. "Now, James, you change places with me, and say something." James at once entered the pulpit, and said very distinctly, and even emphatically, "I haven't had any wages for a month. How does that sound, sir?" (Laughter.)

A laugh is worth a hundred groans in any market. The success of a man in business depends upon the number to whom he can make himself agreeable. Much in business comes to the courteous and deserving. With a wise enthusiasm and honest purpose, a thorough skill and a ripe knowledge of his line, kindness will win all hearts, and with them many orders. Cultivate natural kindness of disposition, so that it will fit well when it comes to be used. It will bring you friends. "He that would have friends must show himself friendly." Let the sun shine around you everywhere. You will get some of the light yourself, and will not miss the rays that your good nature sheds over the life of others.

I will now remind myself of one more story, and I am sure you will characterize it as an appropriate conclusion to my remarks. Bishop Waterson, of Nebraska, was once mistaken for a traveling salesman by one who met him on a railway train. "Do you represent a big house?" asked the traveler of the bishop. "The biggest on earth," replied the bishop. "What's the name of the firm?" "Lord and Church." "Hum, Lord and Church; never heard of it. Got branch houses anywhere?" "Branch houses all over the world." "That's queer; never heard of them. Is it boots and shoes?" "No." "Oh, dry goods, I suppose?" "Yes, they call my sermons that sometimes." (Laughter and Applause.)

Toastmaster Huhn: I regret to announce at this time the fact that owing to ill health that Mr. D. V. Purington, of Chicago, is unable to be present with us this evening. It was his purpose to respond to the toast, "Origin, Early History and Development of the National Brick Manufacturers Association." As he has written a letter to the Chairman of the entertainment committee which I feel would be a matter of interest to the Association. I will call on Secretary Randall to read the communication.

Theo. A. Randall, Indianapolis: Mr. Toastmaster, Ladies and Gentlemen:—There is an old saying that it is the "Unexpected that always happens." Mr. Purington will be as much surprised when he knows that I read his paper as I was when I knew he was on this list and I was to read his paper for him. It is addressed to J. H. Chambers, "Howard" I love to call him. who was to read Mr. Purington's message, but owing to a slight hoarseness, he has asked me to perform that service.

ORIGIN, EARLY HISTORY, AND DEVELOPMENT OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION.

By D. V. Purington, Chicago, Ill.

My Dear Mr. Chambers: I thank you for your letter of the 19th inst., conveying Mr. Huhn's request that I respond to a toast at your banquet — a toast which should tell of the origin, early history and development of the National Brick Manufacturers' Association. I am sorry that I can not accept his invitation, for that theme, if any, might inspire me to eloquence. Still more do I regret that I must again forego the pleasure of meeting so many friends; but I am ordered by my physician to a warmer climate.

I confidently expect to be well again, but can hardly hope that my cure can be accomplished in a few weeks, and it would seem foolish to risk the transition from a southern latitude to even a Philadelphia winter.

To me the twentieth meeting of our Association would have had an added interest from the fact that it will be called to order by the same man who performed that office nearly a score of years ago, and the contrast between that feeble beginning and the accomplished result of 1906 will be more marked to him than to any one else. The growth, prosperity and usefulness of our society is unprecedented in the history of trade organizations, and in view of the many similar associations that have fallen by the way during the life of ours, it may not be amiss to ask why the National Brick Manufacturers' Association has shown such vitality.

One prime reason was doubtless the fortunate hour of its birth. Successful revolutions in manufactures, as in politics or religion, must spring from some widely felt need of reform. Brickmaking, one of the oldest of the industrial arts, had been the least progressive. Not until the nineteenth century did the brickmakers of Germany, France, England or America awaken to the inherent possibilities of their trade, and it was not until late in the century that the clayworkers of the United States grasped the fact that they were not keeping pace with other kindred industries, or with the demand for a more varied and greatly increased product.

The inventor suddenly realized that in this homely craft was an untrodden field for *his* efforts, and there began an evolution in the methods, processes and results achieved by the clayworker which has astonished the world.

All over our country earnest, thoughtful, progressive men were working single-handed to better their condition. In numerous instances the same problem was solved simultaneously by different individuals working quite independently in widely separated sections. Every live brick yard was a laboratory and every burning kiln an object lesson to the wide-awake clayworker. The time was ripe for a diffusion of ideas and a comparison of views of the men who believed that improvement was possible. To no *one* man is due the credit of that first meeting in Cincinnati, or for the results which have since given it such significance.

The Declaration of Independence was written by one hand, but the principles it embodied, the truths it expounded, were indeed "self-evident," and as that document recorded the convictions of every reflecting mind in the colonies, so in an humbler way did that little band of clayworkers in 1886 represent the needs of every brickmaker in the United States. A second factor (and by no means a minor one) which contributed largely to our growth and efficiency was the absolute unselfishness of the charter members of our Association. Never, I believe, did an equal number of men engaged in the same line of business come together with more singleness of purpose, or a more disinterested wish to benefit others, as well as themselves. Their one aim was to establish a system by which the knowledge and experience of each individual member should become the property of all.

Ellis Lovejoy, Treasurer-elect American Ceramic Society, Columbus, Ohio.

When we remember that a quarter of a century ago there were few written or printed records of the clayworking art in the United States; that no trade journal worthy of the name was in existence; when we realize the growth of our industry in that time, when we note the difference in quality of output, its character and variety, and concede, as we must, that to the National Brick Manufacturer's Association this evolution is largely due, are we not justified in a reasonable pride that from so modest a planting there has come so abundant a harvest?

We should not lose sight of the fact that the increased output and improved quality of our product has been accomplished with a constantly diminished proportion of labor. To none of our members has the Association proved a more friendly ally than to those whose ingenuity has done so much to solve this problem of labor saving.

We veterans who began our struggle with clay some forty years ago, and to whom the crude processes and clumsy machines of that period are vivid memories and not mere ancient history, know how to value these men who have made it possible for us to do more and better work with one man than our forefathers could with ten.

"Our Association" and all that pertains to it are very dear to me, and the temptation to continue sounding its praises is strong; but I must not forget that, unlike myself, you are a busy man.

Please extend to Mr. Huhn my sincere thanks for the suggestion which has prompted this letter, and to the members, one and all, my greetings of loyal friendship.

I hope the future has for the Association many of these reunions in the pleasure of which we may both participate. (Applause.)

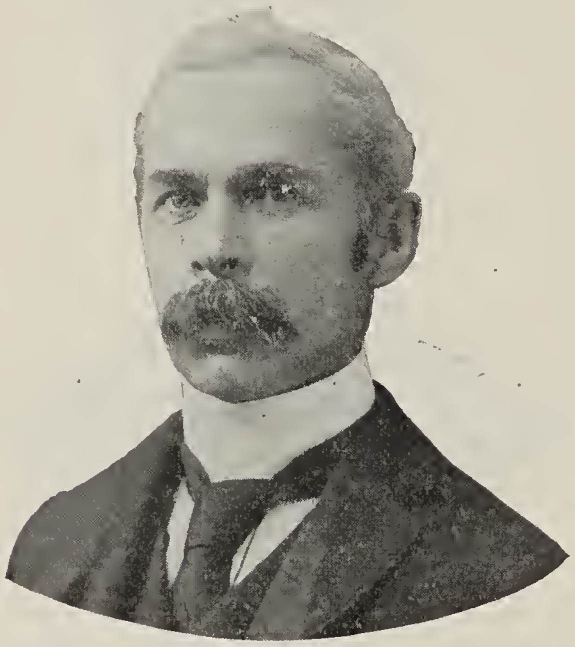
Secretary Randall: Mr. Purington is correct, if you will allow me to say a word, in his statement that to no one man is due the success of this organization. Its success is phenomenal. Like Mr. Purington, I have seen other organizations come and go. The success of this Association is due to an earnest, honest purpose to advance the clayworking interests. It was predicted at the outset that this Association could not succeed, that it would go to pieces like a rope of sand. What has held this Association together is the earnestness of purpose the singleness of purpose of our members, and that is what will make further progress possible, and is the stepping-stone to higher progress in the clayworking industries. (Applause.)

Toastmaster Huhn: It now becomes my pleasure to introduce to you one of the foremost educators in the Ceramic world. He comes of a family of potters and literateurs, his father having given to the Ceramic world a valuable work on pottery and who was himself a potter. The gentleman in question being now at the head of the School for Clayworkers for the State of New York it now affords me pleasure to introduce to you Prof. Charles F. Binns who will respond to the toast, "Tailings." (Applause.)

TAILINGS.

By Charles T. Binns, Alfred, N. Y.

Mr. Toastmaster, Ladies and Gentlemen: It is related of an English politician that he was to speak at a public dinner. The time drew near for his appearance and there was a buzz of conversation around when the toastmaster leaned over and asked, "Shall we let the people enjoy themselves a little longer or shall we have your speech now?"



Prof. Chas. F. Binns, Alfred, N. Y.

This suggests my position, for while I am sorry to intrude upon your enjoyment, you had better get the speech over and done with, like a visit to the dentist.

I am scheduled to talk on "Tailings" for a time, and the subject has the convenient merit of being capable of adaptation to any kind of an end. It is like the function which the Scotchman attended. The minister was taking a walk one morning when he espied one of his parishioners in the ditch. "Ah, John," he exclaimed, "and where were you last nicht?" "Deed then," replied John, "I dinna richtly ken whether it was a marryin' or a buryin', but whichever it was, it was a most extraordinary success."

It is, perhaps, too much to hope for a like verdict on these remarks, but at any rate you will not be able to tell tomorrow morning what they referred to any more than John was.

Tailings are both good and bad. Sometimes they consist of what we want to save and sometimes it is best to get rid of them as quickly as possible. The grinding wheels of life roll heavily over our heads, and it is a wonder sometimes that we ourselves are not tailings. We are sifted and screened; the good is saved, the bad rejected. We who are engaged in school work know something of the sifting. It is part of our business to separate the good from the bad. It was once said that no man should enter the ministry of the church unless he couldn't help it, and I sometimes think that a similar condition might well apply to those aspiring to enter the clayworking business. If in the training of young men we can prevent unsuitable persons taking up this work, and can switch them off to some employment where they will be better fitted, our efforts will not have been entirely wasted. It is not every one who will make a good brickmaker, or even a good potter. Some parents on the lookout for positions for their boys send them into a school of clayworking because the field is relatively new and they may as well try the experiment. The boy may be suited to the work or he may not, and that reminds me of a story:

A prominent educator was speaking on the advantages of a college training when he was interrupted by a man in the audience who said that he knew a young fellow who had been to college and when he came out he was not able to earn his salt. "He hardly knows enough to come in when it rains," went on the objector. "He has never amounted to anything and never will." "Well," replied the speaker, "I remember something like that in the ancient Scriptures. You recollect how when Moses came down from the mountain where he had been to receive the tables of the law, he found that the people had made a golden calf and were dancing before it? Moses was very angry, you know, and he scolded Aaron, his brother, soundly, taking him to task for the wrong-doing of the people. Aaron excused himself, saying that when the people demanded a god he tried to turn them from their purpose by asking for their gold ornaments. "I called for the gold," he said, "and they gave it to me and I cast it into the fire and there came out — this calf," and, you know, it does sometimes happen that way. You parents give us teachers of your gold. You send your treasure to us, it is cast into the furnace of college life and there comes out a— calf. But, believe me, the calves that come out of our schools are mighty few; so few that if there are any prodigal brickmakers waiting to slaughter them, there won't be a very abundant feast. And if it does happen so, are there no failures in other walks of life? Take courage, good father, send the calf back to the pasture and try again. He may make good, veal anyway. (Laughter.)

Speaking of schools always reminds me of Orton. He will pardon me, I am sure, if I tell a story on him which I have been saving up for nearly a year. An occasion like this is on a par with the opening of a penny bank or excavating a Christmas stocking. However, I do it unblushingly in this city, for they have a street dedicated to chestnuts. But to return to Orton. Among his many qualities that which astonishes us most of all is his capacity for work. He is simply insatiable. This probably accounts for the pace set in anything where he is concerned.

Well, it was a warm summer day, and an individual lounged into a saloon in St. Louis (this is not where the likeness to Orton comes in). He had already indulged in a smile or two and he leaned up against the bar, probably to think. At the far end stood an electric fan which was doing its best to circulate the air, and upon it the visitor fixed a drowsy eye. The barkeeper came up and asked his pleasure, but instead of answering, the man took out his watch and kept his eye upon the moving fan. "Look here," said the bartender, "if you don't wan't anything, get out; we are not running this place for fun." "Now, my friend," answered the visitor, "don't get hot under the collar; I'm just watching to see how long that blame squirrel can go without getting tired." (Laughter.)

There is a vast amount of satisfaction in the work of training young men to follow the path you yourself have chosen. When the boys go out and make good in their positions, one feels something of the pride of parentage. Like the young couple, you know, who took their first-born out one fine day. They went down-town and it began to rain heavily. Nothing would satisfy the proud mother but she must have a baby carriage to go home with lest the infant should suffer. Accordingly, they made the purchase and started for home. People smiled as they passed, and the tribute to the beauty of the baby and the pleasure of the parents was graciously taken; they knew there never was such a baby before, anyway. However, they finished their journey in safety, and as the young husband lifted the carriage up the front steps the wife exclaimed with a gasp, "William, look here!" He looked, and there on the front of the little wagon was a large label, "None better, our own make." (Laughter.)

That is much as Orton, and I feel about the boys, and presently Parmalee and Purdy will be in the field with their families, too. In case either of these gentlemen should be unmarried, let me hasten to add that I mean no reflection upon his personal character.

But even with the boys we have there are not enough. The demand exceeds the supply, and there is no indication of a glut in the market. It is like the bishop's church in Washington. He was speaking to one of the senators and enquiring tenderly why he did not see him in church. The senator smiled as he tried to escape. "Well, you know, bishop, the fact is there are so many hypocrites in church." "Oh, well," replied the bishop, "don't let that keep you away, senator; there's always room for one more."

It is good to see a young man go out from college and make a place for himself by means of his own knowledge and personality. A man has got to assert himself in these days, and if he does so with knowledge back of him, he is generally on the safe side. We respect authority too little in this great republic; but, perhaps, you will think it natural for an Englishman to say this. Englishmen, however, occasionally err on the other side. There was a man in Cleveland who took a great pride in his home. He had all kinds of contrivances for providing amusement for his friends. Among other things, he had a phonograph fitted in the bath room. An Englishman came to stop with him, and in the fullness of his heart the host provided a record which was inscribed with "God Save the King." "Well," said he to his guest, "I hope you liked the music." "Music!" echoed the other, "the durn thing played 'God Save the King,' and I had to stand up the whole time I was taking a bath."

I would like to add one word as an end to these tailings. I am sure you wish them finished; but, perhaps, if you sift them, you will find something to burn. What I want to say is this: We are concerned in the production of articles of utility, but there is no reason why they should not be also articles of beauty. At the last analysis there is nothing more beautiful in architecture than the simple surface of a wall of common brick. This is being recognized more and more, and in the buildings designed by our leading architects you will find that the ordinary soft-mud brick is used for color effects and for surfaces in a way it never has been before. Good and beautiful things are as easy to make as things which are bad and ugly.

A little girl went into a drug store and asked for a packet of diamond dye "and, please," said she, "let it be a fashionable color." "A fashionable color?" said the man behind the counter, "why, what is it for?" "Well," replied the child, "the doctor says ma has stomach trouble and she ought to diet, and ma says if she has to

A word to the wise is sufficient. You are not in business for the health of your respective persons, but if you must make brick, you may as well make them good. [Applause.]

Toastmaster Huhn: Ladies and Gentlemen: Our program is completed and again thanking you one and all for meeting with us, we will close by singing "Auld Lang Syne.

AULD LANG SYNE.

Should auld acquaintance be forgot
And never brought to mind;
Should auld acquaintance be forgot
And days o' Auld Lang Syne.

CHORUS.

For Auld Lang Syne, my dear,
For Auld Lang Syne,
We'll take a cup o' kindness yet
For Auld Lang Syne.

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Chas. H. Claiborne.........Baltimore, Md.
Jno. H. Geis..Brooklyn Sta., Baltimore, Md.
Independent Brick Co.......Baltimore, Md.
Louis N. Rancke..........Baltimore, Md.
Chas. W. Slagle, Jr........Baltimore, Md.
Henry Paupe.............Cumberland, Md.
T. H. Mitchell.............Salisbury, Md.
Glen Perdue...............Salisbury. Md.
Victor Cushwa & Sons...Williamsport, Md.
A. J. Wellington............Boston, Mass.
George M. Fiske............Boston, Mass.
A. D. Rogers...............Boston, Mass.
Frank G. Evatt............Boston, Mass.
Parry Brick Co..............Boston, Mass.

Spiers-Fish Brick Co., The...Boston, Mass.
John W. Hahn..............Boston, Mass.
F. L. Wright................Boston, Mass.
Ernest Yates...............Boston Mass.
Waldo Bros..................Boston, Mass.
Edward D. Emerson.........Boston, Mass.
Albert H. Gleason..........Boston, Mass.
Alfred J. Rodgers, Jr........Boston, Mass.
C. C. Dyer...............Greenfield, Mass.
William Mahanna............Lenox, Mass.
W. A. Bailey..........Northampton, Mass.
C. H. Leathe..........Otter River, Mass.
C. F. Leathe...........Otter River, Mass.
William Sanborn.........Somerville, Mass.
T. D. Potter............Springfield, Mass.
E. L. Cook.............State Farm, Mass.
B. C. Pierce...............Taunton, Mass.
Edward C. Bryan..........Westfield, Mass.
G. H. Atherton.........Boyne City, Mich.
B. A. Shaw............Boyne City, Mich.
A. Wagner & Son..........Dearborn, Mich.
James H. Bates..............Delton, Mich.
Frank M. Willeson..........Detroit, Mich.
John S. Haggerty............Detroit, Mich.
American Blower Co........Detroit, Mich.
George H. Clippert & Bro....Detroit. Mich.
F. H. Wolf Brick Co.........Detroit, Mich
Thomas Bros. Co............Detroit, Mich.
Jacob Daniel...............Detroit, Mich.
Wm. D. Southwick..........Detroit, Mich.
W. J. King.............Grand Blanc, Mich.
W. B Taylor................Jackson, Mich.
J. F. Lewis.................Jackson, Mich.
Holton Brick Co.........Muskegon, Mich.
Saginaw Paving Brick Co....Saginaw, Mich.
Mershon, Schuette, Parker & Co...... ....Saginaw, Mich.
American Sand-Lime Brick Co............ ....Saginaw, Mich.
D. M. Warner...............Sparta, Mich.
H. Brewer & Co..........Tecumseh, Mich.
Zeeland Brick Co...........Zeeland, Mich.
A. C. Ochs..............Springfield, Minn.
Walter Clark............Clarksdale, Miss.
S. A. Williams..........Clarksdale, Miss.
R. A. Pulliam...............Houlka, Miss.
J. W. Parker..............Meridian. Miss.
William T. Miller.......West Point, Miss.
A. R. Pouder.........Cape Girardeau, Mo.
I. C. Wheeler..............Carthage, Mo.
Walter S. Dickey........Kansas City, Mo.
Shinnick & Massman.....Kansas City, Mo.
Robert Nesch............Kansas City, Mo.
J. J. Hoffman..................Milan, Mo.
The Tuttle & Hudson Brick Co., Moberly, Mo.
Christy Fire Clay Co........St. Louis, Mo.
Anthony Ittner............St. Louis, Mo.
H. A. Wheeler..............St. Louis, Mo.
M. F. Williams..............St. Louis, Mo.
J. M. Williams.............St. Louis, Mo.
Lemon Parker..............St. Louis, Mo.
Fernholtz Brick Machinery Co. ....St. Louis, Mo.
John P. Camp..............St. Louis, Mo.
R. F. Grady...............St. Louis, Mo.
Hydraulic Press Brick Co....St. Louis, Mo.
McNeil Pressed Brick Co....St. Louis, Mo.
Otto Hensel ....St. Louis, Mo.
S. Geijsbeek...............St. Louis, Mo.
Laclede Fire Brick Co.....St. Louis, Mo.
W. F. Scott................St. Louis, Mo.
Evans & Howard ....St. Louis, Mo.
A. O. Jones................St. Louis, Mo.
L. D. May ....St. Louis, Mo.
W. P. Grath ....St. Louis, Mo.
Jno. Dell..................St. Louis, Mo.
S. Mitchell.................St. Louis, Mo.
R. A. B. Walsh............St. Louis, Mo.
J. J. Gledhill..............St. Louis, Mo.
S. J. Monroe..........Butte City, Mont.
Charles H. Bray............Helena, Mont.
J. W. Turner............Burnham, Neb.
A. Koehler Company.........Geneva, Neb.
C. F. Kaul................Madison, Neb.
M. S. Storer ....Nelson, Neb.
J. Fred Smith..............Omaha, Neb.
William Sutton ....Table Rock, Neb.
George Frank Ball ....Keene, N. H.
William E. Turner ......Rochester, N. H.
Hubert Somers ......Atlantic City, N. J.
Elton Braddock........Atlantic City, N. J.
Geo. C. Pedrick........Flemington, N. J.
I. W. Pike.................Keyport, N. J.
Otto F. Gehlhaus..........Keyport, N. J.
H. A. Bushnell...........Matawan, N. J.
Chas. L. Carman..........Matawan, N. J.
C. A. Bloomfield, ...Metuchen, N. J.
W. W. Blanchard..........Newark, N. J.

A. S. Reed................Newark, N. J.
Cullen W. Parmelee..New Brunswick, N. J.
D. H. Applegate........Red Bank, N. J.
C. W. Kilborn..........Rosenhayn, N. J.
C. T. Clarke.................Trenton, N. J.
Charles F. Binns..........Alfred, N. Y.
Edwin Brockway...........Brockway, N. Y.
Chas. Graham.............Brooklyn, N. Y.
F. J. Nash.............Brooklyn, N. Y.
W. H. Brush...............Buffalo, N. Y.
V. H. Whitney............Buffalo, N. Y.
J. H. Black................Buffalo, N. Y.
Cling-Surface Mnfg. Co.....Buffalo, N. Y.
G. M. Springer............Buffalo, N. Y.
Geo. W. Schmidt..........Buffalo, N. Y.
S. C. Brush...............Buffalo, N. Y.
George L. Schmidt..........Buffalo, N. Y.
Wm. L. Leary..............Buffalo, N. Y.
Hervey Haigh............Catskill, N. Y.
Caleb Marshall............Catskill, N. Y.
H. O. Dorman............Corning, N. Y.
M. E. Gregory............Corning, N. Y.
Tobias Figie................DeWitt, N. Y.
Walter E. Hilton..........Dunkirk, N. Y.
Clarence P. Hendricks..East Kingston, N. Y.
W. G. Dove...............Geneva, N. Y.
D. P. De Long........Glens Falls, N. Y.
Frank E. Wiles........Grassy Point, N. Y.
Owen Monahan....Green Ridge, S. I., N. Y.
Philip Goldrick..........Haverstraw, N. Y.
John Peck..............Haverstraw, N. Y.
R. G. Eisenhart ......Horseheads, N. Y.
Levi Marshall, Jr........Horseheads, N. Y.
M. J. Stone...............Ithaca, N. Y.
George H. Morton........Jewettville, N. Y.
Albert Terry ....Kingston, N. Y.
Jay Terry...............Kingston, N. Y.
Charles W. Keefer....Mechanicsville, N. Y.
Wm. Lahey.............Newburgh, N. Y.
M. M. Hayden............Newburg, N. Y.
William C. Black........New York, N. Y.
Andrew A. Ayers........New York, N. Y.
Robert C. Martin........New York, N. Y.
Orin D. Person..........New York, N. Y.
Pfotenhauer & Nesbit......New York, N. Y.
Robert Main............New York, N. Y.
Carl E. A. Trommer......New York, N. Y.
Ohio Mining and Mnfg. Co.New York, N. Y.
E. E. Gorton............New York, N. Y.
J. Frances Booream......New York, N. Y.
H. D. Lounsbury........New York, N. Y.
Ed. H. Callaway........New York, N. Y.
M. Gabriel.............New York, N. Y.
Wm. R. Clarke...........New York, N. Y.
Jas. G. Beemer..........New York, N. Y.
H. Huennekes & Co......New York, N. Y.
D. S. Plummer..........New York, N. Y.
Ernst Wiener Co..........New York, N. Y.
American Process Co.....New York, N. Y.
Francis T. Burr..........New York, N. Y.
W. B. Chapman..........New York, N. Y.
A. E. Davidson...........New York, N. Y.
John E. Sparrow ....New York, N. Y.
R. A. Whiston...........New York, N. Y.
J. A. Ridgway............New York, N. Y.
Raymond C. Penfield......New York, N. Y.
J. Parker B. Fiske........New York, N. Y.
Arthur Koppel Co........New York, N. Y.
W. P. Haake..........North Collins, N. Y.
Edward G. Acheson....Niagara Falls, N. Y.
W. H. H. Rogers.......Rochester, N. Y.
N. Y. Hydraulic Press Brick Co., ...
..........................Rochester, N. Y.

W. W. Parry ....Rome, N. Y.
John B. Rose..............Roseton, N. Y.
Albert Perrigo..........Sandy Hill, N. Y.
John T. Washburn.......Saugerties, N Y.
Thomas Kieran..........Stapleton, N. Y.
J. Frank Plumb..........Syracuse, N. Y.
James L. Breed..........Syracuse, N. Y.
William Cannon, Jr. ....Syracuse, N. Y.
Willis N. Dutcher........Syracuse, N. Y.
C. H. Merrick............Syracuse, N. Y.
National Roofing Co....Tonawanda, N. Y.
John Doyle....................Utica, N. Y.
James B. Crowell..........Walkill, N. Y.
D. S. Hildebrand........Asheville, N. C.
F. G. Thompson......Elizabeth City, N. C.
E. A. Poe............Fayetteville, N. C.
W. E. Jeffrey............Rocky Mt. N. C.
J. C. Steele & Son........Statesville, N. C.
Dinnie Bros..........Grand Forks, N. D.
Colonial Pressed Brick Co......Akron, O.
Robinson Clay Product Co......Akron, O.
McCausland Bros..............Akron, O.
Samuel Cooper ....Akron, O.
George H. Bruns..............Brecon, O.
W. W. Reehl ....Bucyrus, O.
The Bonnot Co.................Canton, O.
The Cleveland Brick Co........Canton, O.
G. B. Willis...................Canton, O.
W. A. Eudaly.............Cincinnati, O.
Henry Wuebker...........Cincinnati, O.
The Westwood Brick Co....Cincinnati, O.
Suer & Bros.................Cincinnati, O.
Chas. Taylor's Sons........Cincinnati, O.
L. P. Hazen & Co.........Cincinnati, O.
J. M. Blair ....Cincinnati, O.
Spencer M. Duty ....Cleveland, O.
C. B. Stowe ....Cleveland, O.
Ohio Ceramic Engineering Co, Cleveland, O.
F. H. Eggers.................Cleveland, O.
Dover Fire Brick Co........Cleveland, O.
John Wilson ....Cleveland, O.
Andrew Duty ....Cleveland, O.

Wm. H. Hunt..............Cleveland, O.
Atlas Car Mfg. Co..........Cleveland, O.
H. C. Bradley..............Cleveland, O.
Robert J. Dawson.........Cleveland, Ohio
F. H. Robinson............Cleveland, Ohio
J. W. Candler..............Collinwood, O.
J. M. Adams..............Columbus, Ohio
Prof. Edward Orton........Columbus, O.
The Jeffrey Mnfg. Co........Columbus, O.
L. G. Kilbourne............Columbus, O.
A. V. Bleininger...........Columbus, O.
W. D. Richardson..........Columbus, O.
Ellis Lovejoy ....Columbus, O.
C. H. Doan ....Columbus, O.
F. Henry Angell ....Columbus, O.
C. B. Harrop ....Columbus, O.
John A. Conrad...........Columbus, Ohio
A. S. W. Hoffman.........Columbus, Ohio
Gustav J. Holl...........Columbus, Ohio
Harper Norton Shale Brick Co, Conneaut, O.
The Keller Brick Co....Cuyahoga Falls, O.
Teigler Bros..................Dayton, O.
The C. W. Raymond Co........Dayton, O.
H. Wirsching.................Dayton, O.
Mitchell Brick Co............Delhi, Ohio
Geo. Gleckler.................Elmore, O.
John Kline.................Euclid, Ohio
The Stewart Patent Kiln Co..Findlay, O.
D. M. Potter ....Fremont, O.
E. M. Freese & Co............Galion, O.
B. F. Place..................Galion, O.
C. H. Forry ....Hanover, O.
J. W. Jones.............Haydenville, O.
The Orchard Knob Clay Works Co........
.... Ironton, Ohio

A. Magoon ....Logan, O.
R. D. McManigal..............Logan, O.
Thew Automatic Shovel Co., The, Lorain, O.
Marion Steam Shovel Co.......Marion, O.
W. A. Stephens ....Middleport, O.
Geo. J. Markley........Mineral City, Ohio
The Horton Mfg. Co........Painesville, O.
J. B. Weigel.................Pierce, Ohio
Peebles Paving Brick Co..Portsmouth, O.
H. S. Grimes.............Portsmouth, O.
Adam Buch...............Portsmouth, O.
Portsmouth Brick & Tile Co. ....
.... Portsmouth, Ohio

The J. D. Fate Co..........Plymouth, O.
A. J. Darbyshire ....Sabina, O.
C. W. Turner.............Sciotoville, O.
S. M. Gould.................Shawnee, O.
Adam Grube & Son........Springfield, O.
Thos. Kemp...............Strasburg, O.
Heilman Bros..................Tiffin, O.
James E. Fox..................Toledo, O.
James Fox....................Toledo, O.
W. A. Howell ....Toledo, O.
H. C. Ellis ....Toledo, O.
A. A. Reilly...................Toledo, O.
Ben S. Fisher..........Union Furnace, O.
C. McDermott............Wellington, O.
F. W. Bennett...........Wellington, Ohio
C. G. Stevenson...........Wellsville, Ohio
W. E. Ellenberger....West Park, P. O., O.
The Cleveland Car Co..West Park P. O., O.
L. W. Penfield.............Willoughby, O.
W. J. Carmichael.........Willoughby, Ohio
Charles M. Crook..........Youngstown, O.
O. N. Townsend............Zanesville, O.
American Encaustic Tiling Co., Zanesville, O.
R. H. Rutherford...........Zanesville, O.
R. L. Queisser.............Zanesville, O.
J. V. Montrief............El Reno, Okla.
O. K. Edwards............Newberg, Ore.
Amedee M. Smith..........Portland, Ore.
R. R. Hice............Beaver Falls, Pa.
Reese, Hammond & Co........Bolivar, Pa.
Chas. E. Foster.............Bradford, Pa.
W. M. Hodges ....Bradford, Pa.
Chas. C. Stratton...........Bradford, Pa.
T. J. Melvin................Bradford, Pa.
C. P. Mayer Brick Co......Bridgeville, Pa.
Shull & Badger Brick Co......Butler, Pa.

W. H. G. Walker............Cameron, Pa.
George Fickes ....Carnegie, Pa.
Clearfield Clayworking Co...Clearfield, Pa.
J. E. Mecusker.................Corry, Pa.
U. J. Matson.................DuBois, Pa.
C. K. Williams & Co..........Easton, Pa.
H. C. Dunn.....................Erie, Pa.
W. O. Kutsche..................Erie, Pa.
Henry Hasbrouck........Johnsonburg, Pa.
R. E. Keedy.............Johnstown, Pa.
American Road Machinery Co............

......................Kennett Square, Pa.
G. W. McNees............Kittanning, Pa.
James P. Martin............Lancaster, Pa.
Wm. R. Martin.............Lancaster, Pa.
H. P. Martin ....Lancaster, Pa.
O. R. Hartel...............Lewisburg, Pa.
John P. McIntyre ....McKeesport, Pa.
Calvin F. Smith............Nazareth, Pa.
P. A. Smith...........New Brighton, Pa.
T. W. D. Addenbrook....New Brighton, Pa.
H. R. Beegle............New Galilee, Pa.
Cyrus Chambers, Jr........Overbrook, Pa.
Geo. B. Walte................Parsons, Pa.
Thomas B. McAvoy, Jr...Pawling, P. O. Pa.
Murrell Dobbins ....Philadelphia, Pa.
Webster & Keyser........Philadelphia, Pa.
J. H. Chambers..........Philadelphia, Pa.
Wm. Conway ....Philadelphia, Pa.
T. B. McAvoy ....Philadelphia, Pa.

John H. Earley ....Philadelphia, Pa.
O. W. Ketcham ....Philadelphia, Pa.
Main Belting Co..........Philadelphia, Pa.
A. R. Root ....Philadelphia, Pa.
Geo. A. Bass............Philadelphia, Pa.
E. H. Carroll............Philadelphia, Pa.
P. F. Carroll............Philadelphia, Pa.
S. B. Dobbs.............Philadelphia, Pa.
E. D. Dorsey............Philadelphia, Pa.
E. F. Houghton & Co....Philadelphia, Pa.
John R. Huhn............Philadelphia, Pa.
Edwin A. King.........Philadelphia, Pa.
Frank B. McAvoy........Philadelphia, Pa.
Mack Manufacturing Co..Philadelphia, Pa.
Elmer E. Melick.........Philadelphia, Pa.
E. A. Snow.............Philadelphia, Pa.
Equitable Brick Co.......Philadelphia, Pa.
I. L. Conkling...........Philadelphia, Pa.
Smith Bros. Brick Co........Pittsburg, Pa.
D. T. Riffle.................Pittsburg, Pa.
Sankey Bros...............Pittsburg, Pa.
Phillips & McLaren ....Pittsburg, Pa.
W. D. Henry..............Pittsburg, Pa.
W. R. Hersperger..........Pittsburg, Pa.
William Flinn..............Pittsburg, Pa.
Grant Dibert...............Pittsburg, Pa.
Evan Jones ....Pittsburg, Pa.
A. A. Hersperger............Pittsburg, Pa.
Central Brick Co...........Pittsburg, Pa.
Thomas M, Wilson..........Pittsburg, Pa.
Darlington Brick & Mining Co. ....
.... Pittsburg, Pa.
E. S. Fox & Co..............Reading, Pa.
G. W. Lenkerd ....Reynoldsville, Pa.
W. S. Ravenscroft ....Ridgeway, Pa.
R. C. Reynolds...........Saylorsburg, Pa.
Union Brick Co............Shamokin, Pa.
Alfred Yates...............Shawmut, Pa.
Lewis H. Alwine........Spring Forge, Pa.
Thomas Hampton......West Elizabeth, Pa.
George T. Dickover.......Wilkesbarre, Pa.
Wm. Steele............West Winfield, Pa.
Wm. S. Dickover........Wilkes Barre, Pa.
Williams Grove Brick Co. ....
......................Williams Grove, Pa.
D. P. Guise ....Williamsport, Pa.
G. E. Goldner....................York, Pa.
York Shale Press Brick Co.. York City, Pa.
W. G. Titcomb ....Providence, R. I.
Wm. L. Studley..........Providence, R. I.
C. G. Guignard...........Columbia, S. C.
H. W. Hanahan...........Columbia, S. C.
John F. R. Villalta ......Barcelona, Spain
H. A. Winters..........Chattanooga, Tenn.
J. W. Wells...........Chattanooga, Tenn.
Rush A. Jones.............Jackson, Tenn.
X. B. Wickersham..........Jackson, Tenn.
C. B. Booth..............Knoxville, Tenn.
T. C. Lundy.............Knoxville, Tenn.
Knoxville Brick Co.......Knoxville, Tenn.
Alex. A. Scott...........Knoxville, Tenn.
Robert A. Speed..........Memphis, Tenn.
Frank H. Reid...........Memphis, Tenn.
T. L. Herbert............Nashville, Tenn.
W. D. LeSueur...........Nashville, Tenn.
Joe P. Fulcher ....Nashville, Tenn.
E. T. Lewis Co..........Nashville, Tenn.
J. E. Whitesell...........Corsicana, Tex.
J. M. Harry...................Dallas, Tex.
Fraser-Johnston Brick Co.....Emory, Tex.
A. R. Harwood.............Gonzales, Tex.
F. S. Naugle................Thurber, Tex.
J. P. Cahoon........Salt Lake City, Utah
Wm. S. Simpkins....Salt Lake City, Utah
George Curley ......Salt Lake City, Utah
Justis Junk.........Salt Lake City, Utah
A. W. Perkins................Rutland, Vt.
C. H. Yohe...............Alexandria, Va.
Joseph Walker............Alexandria, Va.
National Paint and Manganese Co........
.... Lynchburg, Va.
D. E. Cronsharn..........Mt. Meridian, Va.
J. W. Davis ....Newport News, Va.
F. W. Dennis ....Norfolk, Va.
Joel Booth................Richlands, Va.
D. G. Robinson............Richlands, Va.
W. Benj. Davis............Richmond, Va.
A. V. Sturgeon................Suffolk, Va.
H. L. Jacobs.................Suffolk, Va.
Denny-Renton Clay & Coal Co. ......
.... Seattle, Wash.
W. H. Carter..............Appleton, Wis.
G. W. Kennedy..........Manitowoc, Wis.
L. H. Taylor.............Milwaukee, Wis.
Clifford Chase...........Milwaukee, Wis.
P. L. Youngren..........Milwaukee, Wis.
George J. Schwarz.......Milwaukee, Wis.
Fred C. Bogk ....Milwaukee, Wis.
Ferdinand Vogt..........Milwaukee, Wis.
Samuel Gunther......Pt. Washington, Wis.
Henry W. Carter...........Oshkosh, Wis.
E. C. Teckonius M'fg. Co......Racine, Wis.
Oscar Zimbal............Sheboygan, Wis.
I. M. Justice............Bethany, W. Va.
Phil. J. Hodgman......Moundsville, W. Va.
C. H. Carpenter.........Wheeling, W. Va.

In Memoriam.

John E. Parry..............Boston, Mass.
Adam Schneider............Columbus, O.
George J. M. Ashby, ...St. Louis, M
Ellis P. Raymond........New Yo
A. G. Haven............Sangerfield, N. Y.
Jas. W. Tester.............Toronto, Ont.

Written for The Clay-Worker.

TRENTON TRIP OF THE AMERICAN CERAMIC SOCIETY.

After the close of a most successful meeting the American Ceramic Society, about twenty of the members, gathered the next morning, Thursday, Feb. 8th, at the Broad Street depot in Philadelphia to make the trip to Trenton. Under the guidance of the social genius, Mr. Ed. C. Stover, the first stop was made at Morrisville, Pa., where the plant of the Robertson Art Tile Co., was visited. Mr. E. Townsend and Mr. W. H. Muller took charge of the party and showed us the workings of the plant. Many very interesting features in mechanical devices were observed. The product of the plant are tiles in full and matt glazes. After spending about an hour at this plant, the party crossed the Delaware River to Trenton and the next stop was made at the plant of the William Golding Sons Co. This firm is well known all over the country, supplying the potters and clay-workers with their ground body and glaze materials. Large burr mills grind the raw material to fine powder, which is screened. The fine material is then transferred to large ball mills, and ground still finer to a finished product. The interest taken by the members of the party showed that the visit to this plant was most instructive.

The next stop was made at the Trenton House where the Trenton members of the Society acted as hosts.. A very delightful time and an excellent dinner was served at which about forty persons took part. After dinner the party took the street car, and visited the show-rooms of the Ceramic Art Co. Mr. H. A. Brown explained in detail the features of the product, and the ware produced can be considered as being of the highest class produced by any American pottery. Then we went to the Star Electric Porcelain Works, where Dr. Britton took charge of the party. This firm manufactures porcelain specialties for electric purposes. The wonderful dies and the product made with the same were a source of surprise to every one.

The Cook Pottery was visited next, and Mr. Mellroy showed the party around. The moldmaking, the pressing, the jiggering and other features of the pottery line were carefully explained. This pottery has made a great success with under-glazed decorated ware, and some fine specimens of jardiniers, vases and dinner sets were shown in that line.

As the time passed rapidly, and the return trip to Philadelphia had to be made that same evening only one more plant was visited, the sanitary works of the Thos. Maddock & Sons Co. Here the manufacturing of all sanitary supplies was explained in detail. The handling of such large pieces of ware of vitrified bodies is quite a feature, and the visit was very interesting.

After taking leave of our guide and host, Mr. Ed. Stover, and thanking him for the great pleasure which this trip had given us, we returned to Philadelphia about six in the evening, a tired but happy party. A. SAINT.

THE SIDE TRIP TO ATLANTIC CITY.

Members of the N. B. M. A. have enjoyed many delightful side trips, but in all of our twenty years of journeyings, no trip has been more thoroughly happy than the one to Atlantic City. Everything conspired to make it an ideal outing. The weather god smiled propitiously and provided the brightest of sunshiny weather imaginable. The trip to the shore was itself a pleasant experience, though brief—sixty miles in sixty minutes being the scheduled time.

Arriving at the Rudolf Hotel, the party, numbering nearly one hundred, was comfortably cared for in a surprisingly short time—they are accustomed to handling crowds at the Rudolf—and then the Board Walk was explored. The bracing sea air, tempered with the bright sunshine, acted as a tonic, and even the older members got gay and coltish. Much to our surprise, we found the Board Walk thronged; thousands and thousands of people were there ahead of us, all bent on the one idea of having a good time. Something of the spirit of the place is shown in the accompanying views. It was a pleasure trip in the fullest sense of the word, and if those who participated were allowed to cast the deciding vote, the next convention would be held at Atlantic City, without a doubt.

A Portion of the N. B. M. A. Party on the Board Walk Approach to the Rudolf Hotel.

Some of the things we would like to show the readers of The Clay-Worker were beyond the scope of even the kodak. For instance, a snap-shot of Will P. Blair, the President of the National Paving Brick Manufacturers' Association, in bathing costume, diving from the spring board into the pool of the Casino, would have excelled in grace and grotesqueness both, anything that we are able to picture. Still the views shown speak more eloquently than words of the effect the ozone had on some of the members.

The stay was all too brief, the majority of the party only stopped over Sunday, but while there each and every individual lived up to the sentiments of our Hoosier poet: "Let us do the best we can, to live fer all life's wurth."

The N. B. M. A. Side Trip to Atlantic City, Board Walk Snap Shots.

The Right Rev. Fish.

Father Knickerbocker Eisenhart.

Farmer Blair.

Neptune Morse.

The Secretary with a Load.

"Brothers" Miller and Conway.

Colonel Chambers, on Guard.

Nymph Kline of J.

Editor Randall Jr.

Rough Rider Billingsley.

The New Man, Keyser.

THE EXHIBITION ROOM.

As is usually the case, the exhibition room proved very attractive to N. B. M. A delegates, who spent much of their time there examining the specimen brick, models of machinery, trade literature, etc., displayed there. The exhibition room proper adjoined the convention hall and proved adequate for all but heavy exhibits. The latter were placed in an exhibiton room annex on the main floor of the Continental and the machinery and supplies shown there divided honors with the splendid display of Chambers Brothers Co., on the opposite side of the lobby. The latter consisted of a working model of a complete Chambers end cut brick-making outfit, and turned out miniature brick at the rate of 60,000 per day. It was operated by electric power, and was surrounded by interested spectators whenever in operation. Mr. Cyrus Chambers, the venerable inventor, looked after the installation of the exhibit personally and was a conspicuous figure in the lobby throughout the week. He was the recipient of many compliments on the perfect working of his model or miniature outfit.

In the Exhibit Room Annex, the rotund figure of Chris. McDermot—less rotund than in former years, but still rotund,—stood guard over a collection of Wellington ball-bearing barrows, sand dryer, molding sanding machine, brick molds and other brickyard supplies, bearing the "Quaker" or "Monarch" brand, and gave to their friends a souvenir in the form of a neat little pocket-knife. He was ably assisted by Frank W. Bennett, of Wellington, and James W. Hensley, of Indianapolis.

The Fernholtz Brick Machinery Company, of St. Louis, Mo., was represented by Mr. Wm. L. Rodgers, whose smile is of such an enduring character that we are sure he will be placed on the Reception Committee if St. Louis does land the next convention. He displayed a model of the Fernholtz Press to excellent advantage.

Returning to the exhibition room proper: On entering, the first exhibit that caught the eye was a display of paving brick. Two or three chunks of pavement taken from the streets of Terre Haute, Ind., by Will P. Blair offered an ocular demonstration of the fact that when properly laid a brick pavement wears very little and that that little is distributed over the face of the pavement. The particular bricks shown had been under heavy traffic for from twelve to seventeen years, and yet showed less than a sixteenth of an inch loss and no chipping whatever.

Next to this interesting exhibit was a display of samples of pavers from the Shawmut Vitrified Paving Brick Co. They were perfect specimens, and the natural supposition was that they were carefully selected samples. Such, however, was not the case. Mr. Alfred Yates, manager of the plant assured us that they represented the average output of his kilns and this statement was corroborated by those who had visited the plant. Mr. Yates is to be congratulated on his splendid showing. Evidently it would be a good plan for other paving brick manufacturers to visit Shawmut and see for themselves what Mr. Yates is doing and how he does it.

On an adjoining table was displayed a line of beautiful red pressed brick, bearing the imprint of the Lonsdale Pressed Brick Co., of Knoxville, Tenn. T. C. Lundy, the manager of this plant, exhibited this brick with much pride, as well he might, for they spoke in no uncertain way or his skill as a maunfacturer. Excellent samples of front brick were also shown by the Oakland Pressed Brick Co., Zanesville, Ohio; the Hanover Pressed Brick Co., Hanover, Ohio; the Olean Pressed Brick Co., Olean, N. Y.; the Tuma Valley Pressed Brick Co., Bradford Pa.,; and the Logan Brick Manufacturing Co., Logan, Ohio. Several Philadelphia manufacturers showed samples of their common building brick, and the McAvoy Vitrified Brick Co., showed samples of their brick and block from the Perkiomen plant. These displays were placed on tables in the center of the room, while on either side were the displays of machinery and supply manufacturers.

The Main Belting Company, Philadelphia, Pa., exhibited samples of their products and presented visitors with the most unique souvenir of the convention. It was an imitation gray brick, on one side of which appeared Egyptian hieroglyphics, and upon the other a memorandum label giving a description of the brick which was classed as a bit of Oriental archaeology, having its origin in Nippur, Babylonia, where it was used in the erection of the Temple Ekur, builded B. C. 1200. This unique inscription followed: "Ramman Shum User to Bellord of lords, his lord Ramman Shum Usur his obedient servant, provider of Nippur, Chief of Ekur, built Ekur, his beloved house with bricks." The interior decoration of this brick was equally unique and interesting, being a greeting to the members of the N. M. M. A., with illustrations of the manner of making brick in 1490, B. C., and humorous reference to periods intervening. Visitors who failed to get one of these souvenirs missed a good thing. The Chicago representative of the Company, Mr. F. S. Thompson, leant his genial personality to the occasion. As Philadelphia is the home of Leviathan Belting, it is safe to presume that no visitor went away wanting information in regard to same.

The Laclede Brick Co., St. Louis, Mo., was represented by Fred Talbot and A. J. Aubrey, who when not telling of the excellence of Laclede refractory products, were urging the members to be sure to come to St. Louis a year hence.

The Anderson Foundry & Machine Works, Anderson, Ind., were represented by W. N. Durbin, who with a smile, child-like and bland, greeted his host of friends and as opportunity offered told of the merits of the new model Berg Press, and other brick yard appliances bearing the A. F. & M. W. brand.

The Kilborn Brick Veneering Co., Philadelphia, exhibited their device for the production of face brick. It is an attachment for augur side cut machines and being something new attracted much attention.

The American Pulley Co., of Philadelphia, exhibited a line of steel pulleys and some sample steel brick pallets, and distributed rather a unique booklet entitled the "Wheel of Industry."

Jos. Walker, Alexandria, Va., exhibited a model of a brick machine and repress of the type used in the vicinity of the National Capital.

The American Clay Machinery Co., Bucyrus, Ohio, exhibited models of various brick machines, run by electric power, which attracted much attention. The exhibit was in charge of Mr. J. A. Ridgway. The firm was also represented by R. C. Penfield, W. W. Reehl, and Lewis C. Penfield.

Another exhibit in which electric power was used to most excellent advantage was that of the Illinois Supply and Construction Co., of St. Louis. Walter P. Grath, in charge, was kept very busy explaining the modus operandi of his hand and steam power presses, small working models of which were shown, and also a revolving Roofing Tile Press.

The Arthur Koppel Company, New York City, made a very effective showing with a miniature portable railway over which was run a number of tiny dump cars, replicas of the real thing which they offer in a multitude of forms and sizes.

The Berg Brick Press was represented by its inventor, Anton Berg, of Toronto, Canada, in person, and his knowledge as a practical manufacturer of dry press and sand-lime brick, stood him well in hand in setting forth the merits of the presses and other mechanical equipment bearing his name.

E. M. Freese & Co., Plymouth, Ohio, made a modest but very attractive showing by the use of photographs of plants. The firm was represented by B. E. Place, Herbert H. Freese and R. A. Whiston, who distributed their trade literature impartially to all visitors.

The Cleveland Car Company, West Park, Ohio, was represented by W. H. Caskey, who lost no opportunity of handing out literature on dryer cars, etc., all of which went with a pleasant smile.

James B. Crowell & Sons, Walkill, N. Y., showed samples of brick molds.

The Thew Automatic Shovel Co., Lorain, Ohio, was represented by its general manager, Mr. F. W. Smythe, who distributed pamphlets, telling of the advantages of the steam shovel over old style methods of handling clay.

The Atlas Car & Mfg. Co., Cleveland, Ohio was ably represented by Mr. S. A. Williams, who is an authority on all dryer car propositions. He distributed an attractive line of printed matter, setting forth the merits of Atlas cars which are made in all desirable patterns for all manner of purposes. His efforts were well seconded by M. W. Blair, their Chicago representative, and S. R. Vanderbeck.

The Henry Martin Brick Machinery Company, Lancaster, Pa., was represented by H. P. and J. P. Martin, who submitted to button-holing graciously at all hours. The Martin dryer was a fruitful theme of conversation in their vicinity. If any visitor seeking information on this score failed to get it, neither of these gentlemen is responsible, for their button-holes were easily accessible the whole week through, as were also their pamphlets and catalogs.

The Chicago Brick Machinery Company, Chicago, Ill., was represented by the redoubtable John J. Moroney, who treated the visitors to a glimpse of a model of a brand new dry press which makes its bow to the trade under the name of the "White Brick Press," which is peculiarly adapted to the manufacture of sand-lime brick, in the merits of which Mr. Moroney is a firm believer.

The C. W. Raymond Co., Dayton, Ohio, was represented by the senior member of the firm, Charles W. Raymond, A. H. Gleason, J. L. Schroll and A. E. Davidson, all of whom were kept busy greeting old friends and patrons. The Raymond line of machinery now embraces almost everything used in and about clay plants. This fact was clearly set forth in a series of attractive posters and other printed matter.

The Scott Manufacturing Company, St. Louis, Mo., was, as usual, represented by Wm. F. ("Dixie") Scott, who divided his time between the Scott Noiseless plant, and the advocacy of St. Louis for the next convention, and did both ample justice.

The Scott Dry Kiln Company, Columbus, Ohio, exhibited a line of literature setting forth the merits of their system of drying brick without a dryer, and supplemented same by verbal explanations by Mr. Alex. A. Scott, G. J. Holl, and W. D. Richardson, though the duties of the latter, as President of the American Ceramic Society monopolized most of his time.

The J. D. Fate Company, Plymouth, Ohio, was ably represented by H. H. Fate, whose genial phiz again appears on the first of sixteen pages of ads in this issue, the results from the sixteen page insert in January being such as to warrant their repetition. He increased his own popularity and that of the "Premier" line of machinery by presenting delegates with an acceptable souvenir in the form of a celluloid pocket tape measure, bearing the initials of the National Association and his company's trade mark. He also distributed a handsome catalog and other printed matter.

The Standard Dry Kiln Company, Indianapolis, was represented by Mr. V. F. Outland and H. Wirsching, who distributed an especially attractive line of printed matter, setting forth the merits of the Standard brick dryer, dryer cars, turn tables, transfer cars, etc.

The Ohio Ceramic & Engineering Company, Cleveland, Ohio, was represented by H. A. Reader, and Frank H. Robertson, the senior member of the firm, who was honored by being chosen President of the Machine Manufacturers' Association. Their display consisted of literature telling of the merits of the Richardson double die steam represses, the Ohio hand represses, and the improved Sword brick machine, dryer cars and other brickyard equipment.

The Dunlap Mfg. Company, Bloomington, Ill., displayed photographs of their rolling car box door, and their "Perfect" clay screens, the details regarding which were given in a neat little catalog, which Mr. O. W. Dunlap passed out with a smile that has made him popular both at home and abroad. So popular, indeed, that he was chosen secretary of the Machinery Manufacturers' Association, a position for which he is peculiarly fitted.

The Williams Patent Crusher and Pulverizer Company, St. Louis, Mo., was represented by R. H. Beaumont, who displayed a line of printed matter including a catalogue of Williams' crushers and pulverizers, which are adapted to a multitude of uses. Indeed there is scarcely any material which these machines will not handle successfully. Their catalogue also illustrates a line of clay screens, elevators, brick grinders and clay harvesting appliances.

The American Road Machine Co., Kennett Square, Pa., represented by J. C. Laurence and G. F. Monfort, made a modest, but attractive display of literature devoted to road building machinery, of which their Champion rock crusher is an important factor.

The Bonnot Company, Canton, Ohio, was represented by G. Alexander. No attempt at display other than their catalogues and leaflets was made, but these were distributed impartially to all comers and told in a convincing way of the merits of their stiff mud machinery, dry pans and other brickmaking equipment.

The Horton Mfg. Company, Painsville, Ohio, was represented by Mr. C. H. Horton, the senior member of the firm, who arrived a little late but lost not a moment of time after he did get there in imparting information relative to Hercules brickmaking machinery, brick mold sanders, trucks, molds, etc. His new steam dryer was a very absorbing subject.

C. and A. Potts & Company, Indianapolis, was represented by Mr. Albert Potts, whose lobby talks were confessedly fruitful of a number of orders. They made no display other than their printed matter.

Ricketson Mineral Paint Works, Milwaukee, Wis., was represented by Edward Bogk, who showed samples of their artificial coloring materials that was of particular interest to brickmakers whose clays burn an indifferent color.

The Cleveland Hydraulic Press Brick Company, Cleveland, Ohio, was represented by Wm. H. Hunt, the irrepressible. They showed some excellent front brick and gave as souvenirs a miniature red brick bearing the firm name and a label stating that they are agents for "Front and facing brick of 100 different colors." It makes an excellent paper weight.

C. K. Williams & Co., Easton, Pa., was represented by G. W. Mitman, who displayed a line of their coloring materials, which are being used extensively by brick manufacturers throughout the country. They make a specialty of color mixture for sand-lime brick.

The Eastern Paving Brick Company, Catskill, N. Y., was represented by Hervey Haigh, who exhibited some excellent sample brick and some excellent photographs of the plant and of the Haigh Continuous Kiln.

The L. E. Rodgers Engineering Co., Chicago, Ill., was represented by Mr. L. E. Rodgers, who "handed out" cards and circulars and a line of talk on waste heat drying that was very seductive. Mr. Rodger's reputation as an authority on this subject made him one of the most numerously button-holed individuals in attendance.

The American Blower Company, Detroit, Mich., was represented by C. W. Olds, R. P. Bedford, H. S. Warren, and Benjamin Adams, who distributed an excellent line of printed matter illustrating and describing their specialties in the way of engines, fans and blowers for artificial drying and ventilating purposes.

The Jeffrey Manufacturing Company, Columbus, Ohio, was represented by F. Angell, O. S. Gaige and P. C. McKinley, all of whom were kept busy answering inquiries relative to Jeffrey conveyors, clay crushers and mining machinery, for which their firm is noted the world over.

The American Process Company, New York City, was represented by C. E. Emerick, who distributed pamphlets telling of their improved automatic dryers for treating coal, clay, sand, marl, etc.

Phillips & McLaren, Pittsburg, Pa., was represented by Mr. W. J. Phillips, who in his own modest way furnished those desiring it with information relative to their dry pans, ore crushers, etc.

Ernest Weiner, New York, N. Y., was represented by W. A. Scantlebury, who was not appealed to in vain for information relative to railway equipment for clay plants.

The King Engineering Co., Philadelphia, Pa., was represented by Edwin A. King, who industriously circulated the firm's printed matter treating on hot air and waste heat dryers, up and down draft kilns, etc. The King Engineering Co. is the successor of the Sharer Dry Kiln Co., and therefore is thoroughly in touch with the needs of brickmakers.

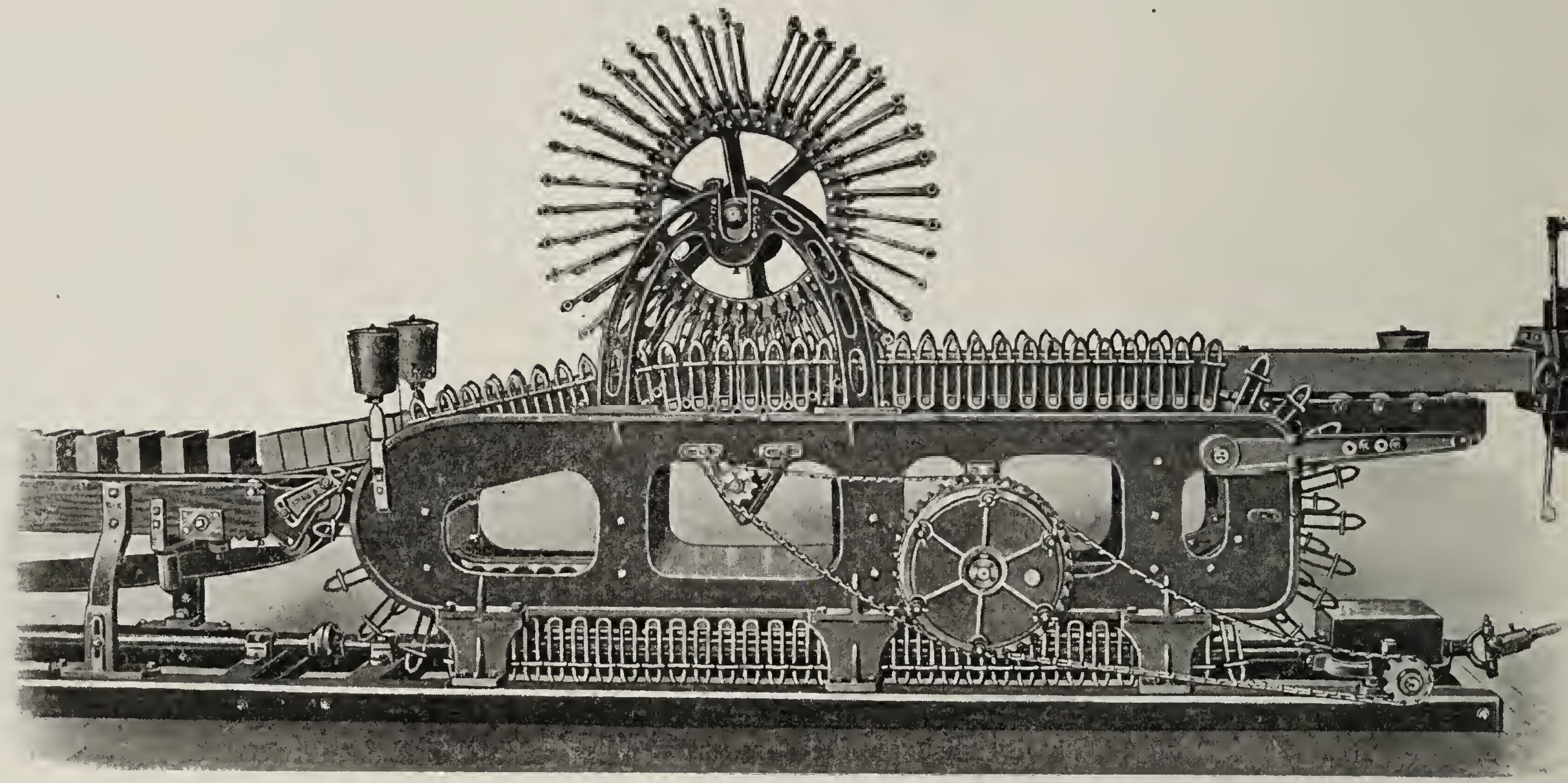
Carl F. Kaul, Madison, Neb., displayed blue prints of his improved continuous kiln, which he maintains is a fuel saver, and therefore a brickyard adjunct that manufacturers may well study carefully. Mr. Kaul is using the kiln on his own plant, to which he invites those interested to visit and see with their own eyes the efficiency and economy obtained.

The trade papers and a number of others representing side lines akin to the clay field were also in evidence and distributed printed matter, pencils, memorandum books and other favors.

THE BENSING AUTOMATIC CUTTER.

THE BENSING Automatic Side Cut Brick Table is now recognized to be in the lead in the race for supremacy among the many automatic side cut brick tables and while many who may see cuts of this table and suppose that it is a complicated piece of machinery; it is, on the contrary, very simple and easy of operation and requires little or no care and attention. It needs only to be started and supplied with a bar of clay and it easily does the rest.

In the operation of this table the column of clay as it issues from the die comes onto an endless belt or chain which revolves around the frame of the table and supports and carries the column into and through the reel where the brick are cut to the desired thickness and as the wires in the reel strike the column square on the top and pass directly down through the column the face of the brick are left perfectly smooth and with sharp and square corners and edges and without the objectionable feather edge. The brick pass off to the separating belt which evenly spaces them in convenient form to be taken off and placed on cars or trucks.



As all the movements of this table are continuous and rotary there is none of the jar or jolt incident to the table that starts and stops with every cut and there is never a stub end of waste brick that has to be returned to the machine to be cut over.

As there are no long measuring belts or metal surfaces over which the column of clay must slide the amount of oil required for this table is very small compared with other tables.

The capacity of this table is limited only by the capacity of the machine behind it, and it will do equally good work whether cutting 25,000 brick or 125,000 per day. Every brick will be cut perfect and if as much care is taken with the brick as they come from the table as is taken with repressed brick those cut on this table will compare favorably with repressed brick.

We give following a letter received from The Fredonia Brick Co., which will give their opinion of the working of this table, and if anyone is interested in this kind of cutting table The J. D. Fate Co., of Plymouth, Ohio will be pleased to give further information in regard to it.

Fredonia, Kan., February 6, 1906.

The J. D. Fate Co., Plymouth, O.

Gentlemen:—You asked in a letter of recent date in regard to how our Bensing Automatic Side-Cut Brick Cutters were working.

We are using five or six tables in our different factories in the gas belt in Kansas, and we presumed as long as we were saying nothng about them that you knew they were giving satisfaction. We are using two in our Fredonia plant. On our "Premier" machine we have made as high as 140,000 a day and the cutter works to our entire satisfaction to that capacity, and we believe could cut 200,000 per day without any trouble. On our second machine at Fredonia we handle about 40,000 large sewer brick per day and the table works perfectly. In our Cherryvale plant we make 35,000 per day, and in our Mound Valley Plant 40,000 per day.. We find that the table works equally as well on one capacity as another ranging from 25,000 to 140,000.

We have been shipping a great many brick to St. Louis for front brick, taken right out of the kiln and without any special handling excepting to get one shade, as the wire cutting down through the top of the brick gives us nearly as perfect a face brick as we get on our dry press brick. We believe that we do not consume one-quarter the wires that are consumed on other tables which cut on a reel which runs the wire diagonally through the clay and in doing this passes between steel plates. We have used both classes of tables and found in our rotary table that the wires were broken and worn by the steel plates,while with your table we cut down on top of the brick and in cutting that way the strain and wear is distributed equally on the wire the full length of the brick. This makes a great saving, and in our clays which are very plastic we find your table has a great advantage over the other tables in having a belt which carries the column of clay to the cutting wires and from there to the delivery belt as there is no sliding of the brick and each one of them is separated exactly the same, which is absolutely necessary where you are repressing your output as where they come off in twos and threes it is necessary for a man to separate them before they reach the feeder at the repress.

I have made this letter a little bit long and perhaps could have conveyed the same information by saying that we are about to erect another plant and will use your outfit including the table. This, of course, would show that we are satisfied.

The Fredonia Brick Co.

John Eakins, a brick manufacturer of Butte, Mont., died at his home in that city February 1st. He was fifty-five years old and had lived in Butte for twenty years.

AMERICAN CERAMIC SOCIETY.

Eighth Annual Convention Held at Philadelphia, Pa., February 5th to February 7th, 1906.

As was expected, the eighth annual meeting of the American Ceramic Society held in Philadelphia, February 5th, 6th, and 7th, was the largest attended in its history. The proximity of Philadelphia to the thriving pottery district of the East brought into line a good number of ceramists new to the Association and swelled the enrollment until now the Society numbers over two hundred. Every session was well attended and so urgent were the requests for the reading and discussion of papers not down on the regular program that an extra session had to be called and the convention hall was crowded from eight until twelve o'clock Tuesday evening. It was on this occasion that Samuel S. Wyer, of Columbus, Ohio, delivered his interesting talk on Producer Gas and its adaptation to the ceramic industries. It was a thorough canvas of the gas producers the world over and the illustrations thrown on the screen brought out more forcefully his arguments concerning the different styles of gas producers and their merits. This is an entirely new feature in the ceramic industry and no very satisfying discussion followed since the use of the gas producer on a ceramic plant is so little understood.

The convention was held in the large convention hall of the Continental Hotel and began its first session Monday morning with nearly two hundred in attendance. President W. D. Gates called the convention to order and delivered an interesting address. After the reading of the minutes by Secretary Orton, which covered in a thorough manner the proceedings of the convention at Birmingham and the mid-summer meeting in Chicago, the paper on incorporation was read. Then followed Stanley G. Burt's report as Treasurer. His resignation was accepted with reluctance as he has been a hard worker in the interest of this Society.

The Secretary's report brought out the fact that it would not be inexpedient to publish the transactions quarterly as was undertaken during the past year. It was decided that the Society return to its old idea and publish a complete report annually. The Socitey was informed that the Biography of Clays in the Ceramic Arts, by Dr. Branner, Vice-President of Leland Stanford, Jr., University, which is being published by the Society, would be on sale about April first, and the cost was fixed at two dollars.

The installation of new officers took place as follows:

President, W. D. Richardson, Columbus, Ohio.
Vice-President, Sam'l. Geijsbeek, St. Louis, Mo.
Secretary, Edwin Orton, Jr., Columbus, Ohio.
Treasurer, Ellis Lovejoy, Columbus, Ohio.
Manager for 1906-1907, A. S. Watts, Victor, N. Y.

Dr. Branner was made an honorary member of the Society due to his excellent work for the Society in giving to it his new book which will undoubtedly be a fine addition to the world's literature on ceramics.

Seven associate members were promoted to full membership, namely: I. L. Conkling, Philadelphia, Pa.; L. B. Coulter, Columbus, Ohio; Herford Hope, New Brighton, Pa.; C. E. Jackson, Wheeling, W. Va.; E. Ogden, Shawnee, Ohio; C. W. Parmelee, New Brunswick, N. J.; F. R. Riddle, Columbus, Ohio.

Forty-four associate members were elected. The present standing of the Society is:

Honorary Members,	2
Foreign and Resident Members,	41
Foreign and Resident Associate Members,	185
Making a Great Total of	228

The first paper of the convention was read at the opening of the second session by Walter M. Fickes, of Carnegie, Pa., and was on the "Cost of Production of Paving Brick Near Pittsburg." He brought out the cost of production by showing his account sheets of the past year and thereby made his paper clear and pointed. This was followed by I. L. Conkling's paper on "Kilns for Burning Architectural Terra Cotta." In his talk he describes the construction of his kilns and spoke of the muffle vs, open burning kiln. A. S. Watts then read a paper on "Re-inforced Concrete as Applied to Pottery Constructions." In this he simply showed his method of erecting his plant. Harrison E. Ashley's paper on "A Comparison of the Various Makes of Seger Cones on the Market," was short and interesting although a very thorough paper, and brought out the fact that the cones of the different makers vary in their melting points. The last paper of the second session was on the technology of the lime industry, by Samuel V. Peppel, Columbus, Ohio. He brought out the fact that lime was one of the first things to be made from rock material, yet has had the least technical research. He showed how little the lime industry had been dealt with technically and put in a plea for a better understanding of technology of the lime industry.

Of the remaining thirty-four papers presented those worthy of particular mention were the papers by Allerton Cushman, Prof. C. F. Binns, Ellsworth Ogden, Ellis Lovejoy, Herford Hope, W. A. Hull and Samuel Geijsbeek.

Allerton Cushman's paper on "Rock Decomposition and Clay Formation," was out of the usual run of ceramic papers and dealt with the subject in a thoroughly scientific style. Prof. Binn's paper on "Rational Analysis" showed that better and more accurate results can be obtained from the chemical analysis than from the usual rational analysis based on the insoluble materials. Ellsworth Ogden's paper on the "Preparation of Clay for the Dry Press Brick Manufacturer was a thorough one and described the methods of the Shawnee plant in a most pleasing manner, showing how the clay was obtained, worked, tempered and delivered to the different parts of the yard. Ellis Lovejoy's paper on the "Use of Barium to Prevent Scum" was the most thorough ever read before the Society on this subject and traced out the advantages and disadvantages in the use of the different barium compounds for the prevention of scum.

The paper on "Biscuit Loss in the Manufacture of Whiteware" by Herford Hope, one of the youngest members in the Society pointed out the many causes for the different kinds of cracks and warps in the whiteware manufacture. W. A. Hull illustrated his paper on the "Control of the Atmospheric Conditions in Kilns with Inclined Grate Furnaces with beautiful tinted drawings, and spoke in a most intelligent way on the different methods of firing.

Samuel Geijsbeek gave a valuable paper to the Society on the "Whiteware Possibilities from Colorado Raw Materials." All of the papers read at the different sessions were very interesting and brought out many protracted discussions.

The convention was undoubtedly the most successful in the history of the Society, and the publication of the transactions of this meeting is being eagerly looked for by many brick manufacturers as well as by the ceramists. On Thursday the members of the Society enjoyed a pleasant trip through the Trenton and neighboring ceramic plants and thus brought the convention to a successful close. The mid-summer meeting will be held at Beaver Falls, Pa., under the auspices of the local manufacturers and a good attendance is expected.

"Always Something to Learn."

Editor Clay-Worker:

I have had 25 years experience in brickmaking business, and find that there is always something to learn. The January issue of the Clay-Worker is alone worth the price of a year's subscription.

Oxford, N. S. Samuel Myatt.

Written for The Clay-Worker.

THE LADIES' BUFFET LUNCHEON AT THE BELLEVUE-STRATFORD.

THE LAST DAY of the convention made its bow with muddy feet, but who minds a trifling inconvenience when there was so much to do?

The ladies who were on the entertainment committee—Mrs. Keyser, Mrs. Chambers, Mrs. John AcAvoy, Mrs. Conkling, Mrs. Earley and the Misses McAvoy—smilingly greeted all comers as they arrived at the Continental from various expeditions of sight-seeing.

Two of the ladies, whom one forbears to mention exercised all of their stock of tact, diplomacy and ingenuity to resist the insistent and persistent pleadings of one man who begged to take the place of his daughter at the luncheon.

However, their escape was finally accomplished, and upon the arrival of the old-fashioned but jolly omnibuses Mr. Keyser's efforts were called into play. He assisted us with much dexterity into places and, after counting noses, found some missing, two faithful women on the third floor, waiting for the third one who could not be found. Alas! Alas! The luncheon waiting, to say nothing of the hungry weaker sex. Presto! She is discovered—sitting calmly in the bus.

Mr. Keyser to the rescue! And now, now at last, the bus has filled. Mr. Conway and Mr. Keyser on guard at the door, lest any reckless woman should escape, and we were off. The jolting of the bus induced an appetite, and we descended at the swell entrance of the Bellevue-Stratford a hungry, but cheerfully expectant company.

Removing wraps, etc., relieving ourselves of all unnecessary moneys, we strolled over to the "Red Room." What a rich and brilliant background for the many colored gowns! Everything was arranged so quietly and harmoniously, seats brought and placed in congenial clusters, each individual finding something harmonious in her vis-a-vis, some kindred spirit, pro tem, found in the glint of the eye, in the mellow laughter or casual remark.

Then joy and perfume! Here comes Mr. Conway and Mr. Keyser, two hard-worked but enthusiastic gallants, and what is this carried between them? Violets, if you please, a veritable bed of violets in good-sized bunches, with ribbon and convenient pin to match. One for each lady, and lots of them left over. Did any one halt to observe the general and individual natures in evidence? Some held the violets in glee, some rushed to other friends not yet favored, to assure them of like courtesy. Oh, Human Nature! What an ever interesting study thou art. Well, at last, all were supplied, and truly a veritable flower garden, vari-colored. A study in violet and other colors with the wondrous red background in the walls, carpets and furniture.

The magic word is spoken, and the screens drawn aside displayed the table filled with things fit for royalty. The white-gloved attendants served fried oysters and chicken salad with dainty biscuit on the side. Some of the ladies who had taken a wee bite, in case the luncheon might be late, must have had many regrets for we were served bountifully as many times as desired. Following the first course, came lobster croquettes.

Then the ice cream served a' petit amoir with hosts of delicate cakes to accompany it. By the time that coffee was served "demi-tasse" the voices had mellowed into a gentle butterfly murmur, and we all, with one accord, arose to the occasion of a tour of the Bellevue-Stratford. With good guides we traversed the hotel from ice-skating rink on the roof garden to the kitchen in the basement.

In cold weather the roof garden, which in summer is so patronized by lovers of music and cooling liquid refreshments is flooded and a beautiful skating rink is improvised. Think of the sight on a cold winter's night. The beautiful skating costumes of the charming women, the electric lights playing upon the bright eyes and rosy cheeks of the gaily animated features, the graceful movements of the dainty feet, with their curves and pirouettes.

Well, to continue. After taking from this height a kaliedescopic view of the city, with the miniature-appearing homes, toy horses and traps, we descended to the ball room. What a long-drawn and involuntary "Oh!" was wafted on the air.

Miss Knight was to be given her second twenty-five thousand dollar ball that evening. The men were using their heavy polishing brushes, the floor was almost too tempting for the good feet which simply ached to glide, and the floral decoration was a beautiful dream. Lilac bushes in full bloom, two thousand yellow tulips, and brides maids roses were interwoven among the ferns and palms which banked the sides of the ball room from ceiling to floor.

With reluctance, we all followed the guide's foot-steps which led next to the "President's" apartments, whenever he shall choose to visit this Quaker city. Then on through the "Clover Room" where the one o'clock supper was to be served after the dance. The Clover Room which was later decorated with 1500 roses.

"Oh, happy rose to nod and dip
At the nectar smile of the rosy lip."

And now, for the practical side of affairs, we were taken to the basement kitchen to watch the ambidextrous motions of those who were industrious in the preparation of all good things to feast the stomach. Such an interested bunch we were, peering into this large pan, then that, examining with eyes to future needs, the various forms and original methods of cooking. Frogs' legs, snails, fish, oh, everthing that looked good.

And over at the end of the kitchen what is doing?

Simply every day monotonous dish-washing. What? That? Wholesale dish-washing indeed! Not a woman that did not envy the device and long to carry it into her own household.

A large wire basket filled to the brim with soiled dishes, dipped by machinery into a huge caldron of hot soap suds, then by a dextrous movement switched over to the other side and plunged into another caldron of hot rinse water.

Oh, 20th Century of Invention! We bow down and worship you in ingenious labor-saving devices and modern equipment.

Well it's all over now, the busy sight-seers are taken to the cloak rooms where the accommodating maids bestir themselves to find rubbers, cloaks and furs.

We each and all, with one accord, linger for a last word of pleasure in the day, and regret at parting. As for my poor self, I must confess that it was almost a pain to part from my erstwhile comrades in pleasure, and were I to believe that we shall not meet again until the convention next year my heart would grow rebellious, and absolutely refuse comfort.

The last pretty sight that cheered us was a picture of Mrs. Keyser, Mrs. McAvoy and Mrs. Earley standing with large bunches of violets in hand to take for distribution among the ladies at the hotel who were unable to join us.

M. E. Lockington.

TRADE NOTES.

Garland & Weaver, brick contractors, of Knoxville, Tenn., have purchased thirty acres of land on which they will erect a modern brick plant.

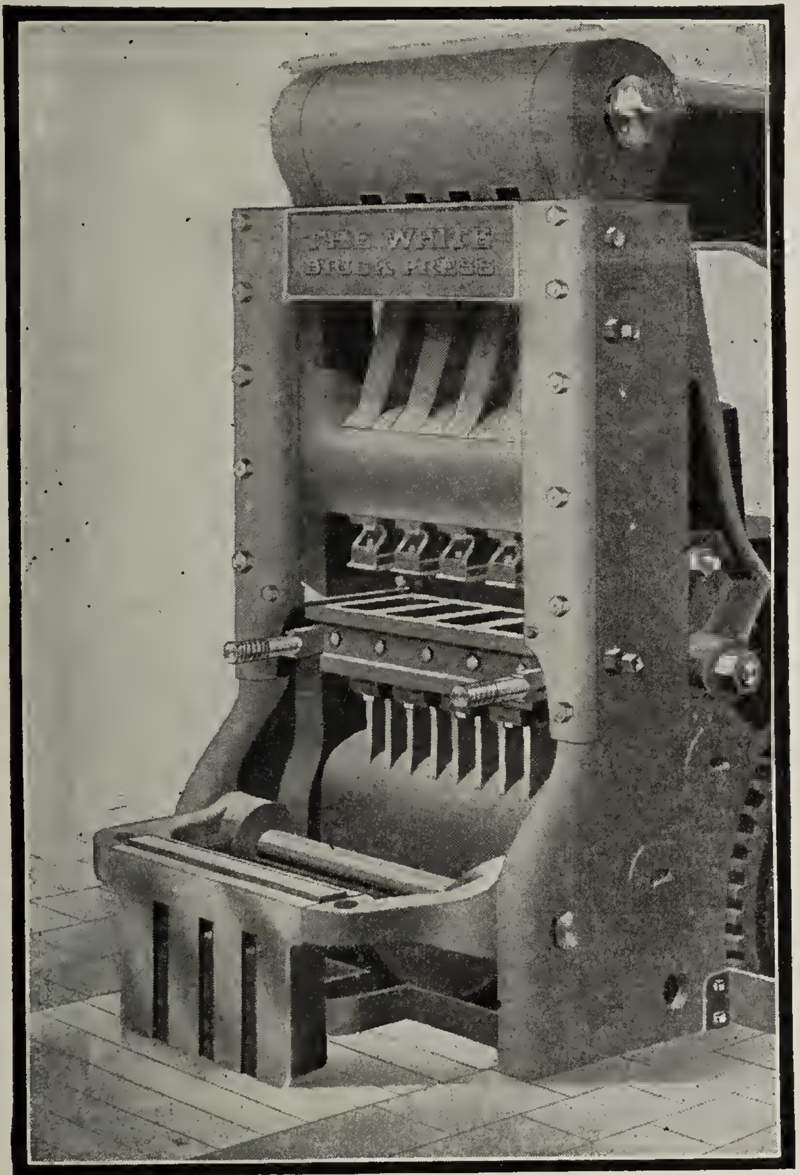
The Mohr-Minton Brick Company, of McArthur, Ohio, will erect a factory at that place for the manufacture of red pressed brick. Work on the plant will begin just as soon as weather conditions will permit.

Sandpoint, Idaho, is to have a new pressed brick plant. E. B. Hewitt, of the same place is making a number of improvements in his plant, so it would seem that the building interests are booming in that vicinity.

THE NEW WHITE BRICK PRESS.

BRICK MAKERS attending the Philadelphia Convention were greatly interested in a beautiful aluminum working model of a new press, which was exhibited by the American Sand-Lime Brick Company. This is called the White Press, and is one of the few machines designed especially with reference to making sand-lime brick; in fact, it is said to be the only vertical press so designed, all others being adaptations of clay brick machines.

This White Press certainly is built along new lines, as will be seen by the cuts on pages 372 and 373 showing front and rear views. The machine seems to be simple and strong; all working parts are easily accessible, and, so far as could be judged from the model, its operation left nothing to be desired. The American Sand-Lime Brick Co. claims that by an improved push-out, and the heating of the front table of the White Press, the marring of the corners and edges of the brick in pushing out, which has been the main difficulty with the vertical type of presses, has been overcome, and that the White Press will deliver brick perfect in every way.



Partial Front View Showing Mold Table Ready to Remove Mold.

The changing of the molds is a still more important feature on a sand-lime than on a clay brick press, owing to the sand being so much harder on mold liners than clay that is necessary to change them oftener. The feature that struck us most forcibly on the new White Press was the hinged mold table, the front half of which can be opened and swung down, as shown in above cut. Thus the whole mold can be slid out entire and replaced with another one, which is certainly a new feature and an important one. It is not necessary to assemble the mold in the machine, as in all other presses, but it is prepared on the vise-bench away from the machine, so that the press need not be disturbed until the mold is ready to be slid into place. This is done in a very few minutes, and the press is ready for use again with perfect molds. Of course, this necessitates furnishing two mold boxes for each press which we understand is to be done.

All brickmakers who have operated dry press plants for any length of time will agree that the lifting out of the brick requires even more power than the pressing, and when breakages of any moment occur, it is usually during the lift-out. This fact has been fully recognized in designing the White Press, and the lift-out is even more powerful than the pressing mechanism, while the reverse is usually the case. It is claimed that any brick which can be made on this press can be ejected smoothly and easily, without strain, trembling or jar.

It would seem as though every new press invented increases the number of pressures given to the brick, as the White Press claims four distinct pressures. These are fully described in the very beautiful catalog of this press, issued by the American Sand-Lime Brick Co., and which is unique in showing separate perspective cuts of almost every part of the machine. Many other new features are illustrated and described, for which we must refer our readers to the catalog.

The American Sand-Lime Brick Co. also makes great claims for this new machine as a clay brick press, although designed originally for sand-lime brick. They say any machine that can make good sand-lime brick, and stands right up to its work day after day, will consider the making of dry press clay brick as a kind of gentle recreation for leisure hours; also that most of the special features of this new press are equally valuable for clay brick work. All of which is respectfully submitted to the dry press brickmakers throughout the country for confirmation.

The White Press is built by the Elwood Iron Works at Elwood, Ind., and sold by the American Sand-Lime Brick Co., of Chicago.

CLAY ENGINEERING.

That the clayworkers of America, especially those engaged in the manufacture of structural products, in which so much capital is invested, have come to realize the benefits to be derived from employing an engineer to investigate their propositions and make complete plans and specifications for the construction of new plants, and for the improvement of old plants, is evidenced by the success of Mr. W. D. Richardson, the pioneer in this line of work. The demand for Mr. Richardson's services has become so great that he has found it necessary to associate other engineers with him, and has organized the Richardson-Lovejoy Engineering Company, incorporated in Ohio with a capital stock of $20,000.

Mr. Ellis Lovejoy, E. M., whose name forms a part of that of the company, needs no introduction to American clayworkers. His scientific attainments, his enthusiastic interests in clays and in the manufacture of clay products and his long and successful experience in charge of the works of the Columbus Brick & Terra Cotta Company are well known to the readers of the "Clay-Worker." Mr. Lovejoy is a member of the American Institute of Mining Engineers and has had considerable experience in coal and clay mining. He worked upon the Geological Survey of Ohio two years and prepared some papers for the State Reports. He has been an active member of the N. B. M. A. for many years. He was a charter member of the American Ceramic Society and was elected Treasurer of this Society at the Philadelphia meeting, at which meeting also Mr. Richardson was elected President.

The other members of this Company are equally able in this line of work. Mr. A. V. Bleininger, B. S., is Assistant Professor in the Ceramic Department of the Ohio State University and is devoting his life to the science of ceramics. He was the editor of the translation of Seger's Collected

Works, and is the editor of the Transactions of the American Ceramic Society. His book upon Cement Manufacture, prepared for the Ohio Geological Survey, has been pronounced by the highest authorities to be the best book upon the subject in the English language.

Mr. Gustave J. Holl is a mechanical engineer of well-known ability. He has worked with Mr. Richardson a good deal for many years in the designing and building of machinery for brick works, and with him organized the Ohio Ceramic Engineering Company of Cleveland.

Mr. C. B. Harrop, E. M., is a graduate of the Ohio State University, has had two years experience as a chemist of a Portland cement company, and has been with Mr. Richardson for the past two years as assistant engineer and in charge of the drafting room.

The Company will extend the line of work started by Mr. Richardson, and will manufacture testing and controlling apparatus for clayworkers and other special mechanical devices required in their engineering practice.

Attention is called to their advertisement on page 367.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Convention Echoes.

Dear Mr. Secretary:—We are glad to say that we had a very enjoyable time at the convention at Philadelphia, and although we were very late, we succeeded in landing some orders, that paid us for the visit, and also became acquainted with some people whom we had not the pleasure of meeting before that time. We regret very much that we were so late and will endeavor to be on hand next time, at an early date.

Hoping that you have become fully rested from your excessive labors at the convention, we are,

Yours very truly,
The Horton Manufacturing Co.

Enjoyed the Side Trip to Atlantic City.

My Dear Randall:—I wish to express my complete enjoyment and thorough appreciation of our Association Convention held in the city of Brotherly Love, and in particular of the royal entertainment by the local committee. I started out to express my feelings, but cannot find words to fully convey what I wish to say.

The side trip to Atlantic City seemed to be thoroughly enjoyed by all who participated in it, and I heard a number remark while there, "What is the matter of having the convention meet here in the near future." It seems to me it would be an ideal place and I hope the Executive Committee will give it consideration.

Wishing you continued success as secretary of our grand Association and as editor and publisher of the Clay-Worker, I am, Yours truly,

Washington, D. C., Feb. 17, 1906. Elliott S. Morse.

Impressions of the Convention.

Editor of Clay-Worker:—I am pleased to report a safe return and hope that all who attended the convention have experienced a pleasant journey. The convention at Philadelphia in my opinion was one of the best meetings we ever had, and the papers and discussions were of such value and instruction that none could help but appreciate the progress of our Association. The papers that were read on regenerative gas, I have no doubt will interest every manufacturer of clay products in this country. It is very gratifying to see papers of this kind presented at our meetings and the program reflects great credit on our worthy secretary.

Good old Philadelphia, the City of Brotherly Love, is never backward in its hospitality, and I think all who attended the convention feel very grateful for the kindness shown by our Philadelphia Brothers. It is very striking to see the changes in the clay business—for instance, Mr. Conkling of the firm of Armstrong & Conkling, Architectural Terra Cotta Manufacturers, throwing their factory doors open for the inspection of their competitors, is an evidence of progress.

I hope we will all live to meet at the next convention and that our worthy and highly esteemed friend, D. V. Purington, will be in attendance. The meetings really do not seem complete without his presence. Hoping for a speedy recovery of his health and with kind regards to all, I remain

Yours very sincerely,

Shawmut, Pa., February 15, 1906. Alfred Yates.

The American Ceramic Society and the N. B. M. A.

Editor Clay-Worker:

I am not yet home from the convention.. If I were, I would be too busy to write. I am at such a distance, however, and so far released from the strenuous life of last week that I can comply with your request to give my impressions of the convention from the view point of a member of the Ceramic Society. I prefer, however, to record a few observations and reflections of the 8th Annual Meeting of the American Ceramic Society from the brickmaker's point of view. I look upon my election to the presidency of the Society as not altogether a personal honor, but also as an honor conferred upon the N. B. M. A., a recognition by the Society not only of the importance of the brickmaking industry in the ceramic world, but of the influence of brickmakers in the establishment of the Ceramic Society and in the promotion of its object. While there are a few members of the Society who are brickmakers, yet a large number of the associate members are of this class, and their number is rapidly increasing.

Why should not this be so? There are more men engaged in brickmaking than in any other branch of the clay industries. It is becoming more widely recognized that a modern brick plant requires for successful operation not only large capital, but men of large business capacity, men of education, of engineering ability and practical experience. These men appreciate the possibilities of the clayworker's art and feel the need of greater technical knowledge. They feel their own limitations by reason of their imperfect understanding of the technics of clayworking. They appreciate the advantages that the young man can now have in our Ceramic Schools and they give their support to the establishment and maintenance of such schools. They appreciate the need of a forum for the discussion of ceramic problems and of such work as the Ceramic Society is doing in searching after truth, in theory and practice, in recording the investigations and building up a literature for the benefit of the ceramic student, in promoting the advancement of the ceramic arts and the excellence of the American Ceramic products. Hence, even though some may not be able to contribute much to the transactions of the Society, yet they feel it a duty and a pleasure to uphold the Society by their membership in it and to contribute annually the small amount necessary to enable the Society to attain its purposes.

Why should not every clayworker take an active interest in this movement to unlock the secrets that have blocked the progress of this art? Why should he not be glad to contribute the small annual dues of the Society and thus help to spread the information so liberally given at their annual meetings and enable the Society to extend its investigations and publications? For my part I cannot understand the reasoning that would lead a man to refuse to aid in every possible way the advancement of the art to which he is devoting the energies of his body and mind and by which he is earning his bread and butter.

The 8th Annual Meeting was the largest in attendance and one of the most fruitful in valuable papers and discussions, of any meeting the Society has held. Voulme VIII of the transactions will be worth to any progressive clayworker more than the price of membership in the Society, and to many the information given will be of incalculable value.

The trip to Trenton, on Thursday under the leadership of Mr. Edward C. Stover, was a treat that will not be forgotten by those so fortunate as to participate in it. The visit to the Robertson Art Tile Works at Morrisville and to the works at Trenton of William Golding Sons Co., the Ceramics Art Co., The Star Porcelain Co., The Cook Pottery Co., and John Maddock & Sons, was most interesting and instructive.

The sumptuous dinner served at the Trenton Hotel excelled anything that could have been expected, and was a courtesy and a compliment that was highly appreciated. I am glad of the opportunity to publicly express, in behalf of the Society, our thanks to Mr. Stover and the other Trenton potters for their kind and hospitable treatment. My only regret is that I could not give closer attention to the meetings of the N. B. M. A. and that at such a large gathering I missed the usual chat with many of my friends and acquaintances.

W. D. Richardson.

Absent, But Still Much Interested.

My Dear Randall:—In the old days I used to enjoy writing you a little letter appreciative of my enjoyment of the then recent Annual Convention. Things have changed and I seem fated to write a letter of sincere regret that I was unable to attend. From all the reports I have had, the interest of clayworkers in these meetings seems to be increasing and the younger generation has "caught on" to what these gatherings mean.

Both the N. B. M. A. and the Ceramic Society deserve congratulations on their selections of presiding officers. The telegram sent me was more than appreciated, I assure you, and I certainly desire to thank the Association for its continued thoughtfulness of one who was forced to refrain from attendance. I never looked more anxiously for The Clay-Worker containing the report.

Sincerely,

D. V. Purington.

Wyndilhurst, Ocean Springs, Miss., Feb. 13, 1906.

A Pleasing Mark of Appreciation.

Editor Clay-Worker:

I have a few friends that I would like to have see your wonderful magazine. Please mail to each of the addresses below one copy of the January number. * * * They are among our best people and I want them to see the article on brick roads. Enclosed find one dollar, which I hope is sufficient. If it is not, please advise me.

P. O. Middletown, Ohio. Craig Hankinson.

The Most Successful Convention Ever, Says a Saint.

Dear Mr. Secretary:

I am glad to say that I am safe at home and that I regard the convention at Philadelphia as certainly the best attended and most successful meeting of clayworkers that I have ever attended. The success of the convention, of course, is largely due to the energetic efforts of the Secretary, whose genial presence seemed to be everywhere at the same time. It must mot be overlooked, though, that a great deal of the success of the convention was due to the brickmakers of Philadelphia. It seemed that they could not do enough for us, and as a result of their kindly attentions, everybody was in an amiable mood and happy. The Philadelphia brickmakers certainly deserve our hearty thanks. Should St. Louis be fortunate enough to secure the next convention, which I trust it will, and hope that the attendance will be even larger, you can rest assured that our local brick manufacturers will do everything in their power to equal, if we can't surpass, the record of our Philadelphia brethern. We Saints pride ourselves on our ability to entertain visitors and I hope a year hence to see every member of the National Brick Manufacturers' Association here in our World's Fair City.

Yours sincerely,

St. Louis, Feb. 15, 1906. W. P. Grath.

Keep Your "Eye" on York.

Editor The Clay-Worker:

York. Pa., used seventy-five per cent. (75%) of light color bricks in her building operations during the year 1905. She has five soft mud plants producing common brick, and four (4) "Dry" Press plants with a capacity of 20,000 each producing a cherry red brick from a green shale which is very abundant in that locality.

In room No. 61, Continental Hotel, at the recent convention held in Philadelphia, were shown light grey, buff and red clays, shales of red, green and blue found on a tract of land owned by P. B. Spahr, of York. Finished products made from the various materials, color press brick from cream white to a rich dark olive, encaustic, floor, dutch and roofing tiles, all burned in "down draft" kilns and steel hard.

It was only for the modesty of Mr. Spahr, that this interesting exhibit was not located with the regular exhibits. Many of the delegates who were interested in the manufacture of light color bricks visited room 61, all expressing themselves as of the opinion that the proposition and exhibit were "brick right" and that Mr. Spahr was "all right."

We predict at an early date an up-to-date plant will be located to develop this tract, and manufacture a line of clay products that will have a market from Maine to Texas..

Yorick.

The Best Paper for Clayworkers.

Editor Clay-Worker:

We subscribed for your journal last month and have received the January issue. We are very much pleased with it. This issue alone is worth the $2.00 and then some. We believe it is the best paper published for clayworkers and that brings us to the subject we wish to take up with you. We are very much interested in the article, "Philadelphia Building Laws," governing the use of concrete and have read it to some of our contractors. They have expressed a desire to have such a law enacted in our little city, hence, we write to you to ask if you could procure a copy of that ordinance or law for us and if so, what would be the probable cost? Thanking you in advance for this favor, we are

Yours very truly,

Mt. Vernon Press Brick Co.

THE MACHINERY MANUFACTURERS' ASSOCIATION.

The National Association of Manufacturers of Clayworking Machinery and Appliances had a number of meetings at Philadelphia and transacted considerable business of a routine character. The officers elected for the ensuing year are, President, F. H. Robinson, Cleveland, Ohio; Vice-President, L. E. Rodgers, Chicago; Secretary, O. W. Dunlap, Bloomington, Ill.; Treasurer, J. H. Chambers, Philadelphia; Executive Committee, L. W. Penfield, Willoughby, Ohio; Albert Potts, Indianapolis, and Wm. F. Scott, St. Louis, Mo. The only unusual feature was a resolution providing for business meetings in the future on Tuesday, or the day previous to the first session of the N. B. M. A., in order that the members may be permitted to attend the sessions of the latter body—a move in the right direction, which will prove helpful also in assuring the placing of exhibits earlier convention week than has been the custom heretofore. The same sweet harmony prevailed with the "missionaries" that characterized the convention.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-THIRD YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

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Six copies, " "	10.00
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☞Subscribers when ordering a change of address should give both the old and new address.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
227-233 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

VOL. XLV. FEBRUARY, 1906. NO. 2.

CURRENT COMMENT.

Philadelphia will ever be a pleasant memory to those who participated in the Twentieth N. B. M. A. Convention.

* * *

Greater harmony never existed in a live body of able, aggressive men than prevailed convention week. Good cheer was in the very atmosphere.

* * *

Not only was the convention a record breaker as to the number in attendance, but as well in the character of the proceedings which we publish in full—the Clay-Worker style.

* * *

The good people of the City of Brotherly Love, though sometimes called slow, have set a pace that it seems, at present writing, will be very difficult to maintain, much less excel, in the years to come.

* * *

The success of the convention is a source of much gratification and the full report in this issue should more than ever endear the Official Organ to the hearts of the members. It represents an immense amount of hard work, but, likewise, it justifies it.

* * *

No resolution of thanks could adequately express the heartfelt appreciation of the visiting ladies for the courtesies shown them by the local committees. The latter had planned for a busy, happy week, and not a single plan miscarried. Even the weather was well nigh perfect.

* * *

Mayor Weaver was particularly happy in both his address of welcome and his response to the toast at the banquet. The compliment he paid Mr. Fiske on the latter occasion was a graceful bit of oratorical finesse, and his courageous stand for independence and purity in public and private life not only won the applause, but the admiration of every visitor. The true sentiment of all was voiced by the Secretary, when he proposed the toast, "Long life and unending success to Mayor Weaver."

* * *

The gentleman who took number Button 426 failed to register. He is requested to communicate with the Secretary in order that the records may be completed.

* * *

On the "Economy of Increased Production." M. W. Blair gave specifically the advantages that are obtained in the use of two machines in one plant as against two separate plants.

* * *

The papers read at Philadelphia were of the same high class and order that has characterized this feature of the N. B. M. A. conventions in all the meetings, and contained many new and beneficial ideas and arguments.

* * *

From Cleveland, the city of fine paved streets and roadways we have by Mr. Deckman, not only a description of how it is done, but some timely advice on the subject of uniformity in specifications for foundations for brick streets and roadways.

* * *

An interesting outline of brickmaking conditions on the Pacific Coast was given by E. O. Simons. Among other things of interest, he tells of the troubles and the good that has finally come to the West Coast brickmakers from coming in contact with the concrete fad.

* * *

New light and technical information that is worth while is furnished by A. J. Aubrey, of St. Louis, Mo., on "Refractory materials and their application." The full value of this paper can only be appreciated by a thorough reading, it is so full of zest that justice can not be done it in a short digest.

* * *

Utilization of heat in drying brick and other clay ware received attention in two papers, that of Mr. Clippert, and Mr. Mitchell, the perusal of which should add material encouragement to efforts along the line of utilizing waste heat, and assist considerably in pointing the way to the attainment of this end.

* * *

In the paper, "The Marketing of the Product," as handled by Mr. Springer, we find that not only must the successful salesman meet competition and sell the goods, but he also occasionally has to meet the kicker afterwards and adjust complaints, many of which are unjust. The man who can do this, and do it right is, as he says, entitled to more appreciation and thanks than he sometimes gets.

* * *

One of the many gratifying features of the convention was the strong delegation from Birmingham: Strong in numbers, strong in the personnel of the members, and strong in the earnest interest manifested in the proceedings. In the language of the street, "There never was a minute, that Birmingham wasn't in it." It is to be expected that Philadelphia will be equally well represented a year hence; yea, even more numerously and better represented, for the Philadelphia ladies have promised to attend the next convention.

* * *

There is both laudation and good advice in the paper on "Burnt Clay as a Universal Building Material," by F. W. Fitzpatrick, who is probably the most active champion of fireproof construction in the country. He paints a glowing picture of the great future before burnt clay and ably points out the puny nature of some of its would be competitors. Then, lest we become careless from too much confidence in the superiority of clay ware, he gives some timely advice, pointing out that this is a progressive age, and while brick and terra cotta makers are doing well, they should do better and keep moving all the time.

THE N. B. M. A. BANNER.

The Associational Banner is both very pretty and appropriate. The small replica of it on our front cover gives but a faint idea of its appearance. The color scheme, blue and gray unted, is worked out beautifully, the shades being delicate and yet blend harmoniously. The banner and the beautiful flag presented by the St. Louis brethren together are very pretty convention hall decorations.

THE PRACTICAL SIDE.

The one-session-a-day idea worked so admirably that it will probably be followed as a rule in the future. It not only affords an opportunity for sight-seeing, which, while pleasant is not always profitable, but enables those bent on adding to their store of brickyard lore to visit plants, inspect machinery and processes, thus determining to their satisfaction, the relative merits and demerits of contemplated additions to their own plant, and this to many is a great advantage. There were more brickyard trips during the Philadelphia convention than at any previous meeting, and they were invariably followed by long and earnest button-hole talks. Probably no preceding convention has been so prolific of this character of intercourse.

THE TRADE SCHOOL IDEA.

President Blair, in his annual address, after taking note of the progress made during the past year, and the outlook ahead including the subject of competitive materials, very aptly and promptly points out that the most serious menace to the future of the brick trade is the lack of skilled workmen to lay brick. This subject is not entirely new, but it is so prominent in its importance as to make it advisable that we should keep it strongly in mind until we find its solution. The solution as suggested by President Blair is the logical one, and that is, the promotion of schools for training young men in the art of manual labor, especially in the art of bricklaying.

A BOARD WALK REFLECTION.

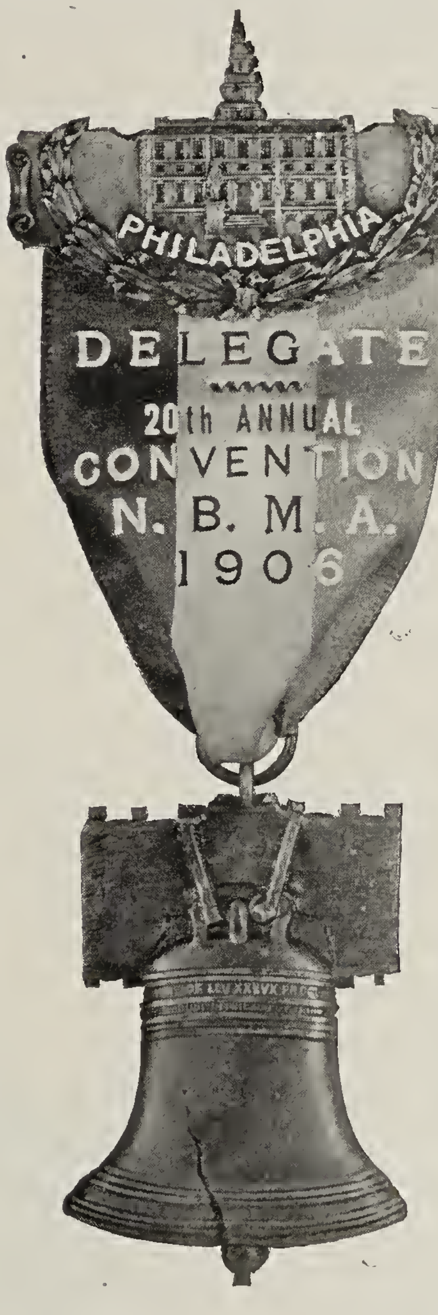
The metropolis has irresistible attractions for almost every one, hence it was not strange that a majority of those in attendance hied themselves to New York soon after adjournment, instead of making the side trips to Atlantic City and tarrying there over Sunday. That they missed a rare treat and a most enjoyable bit of recreation is told on a preceding page. Those who did observe the injunction on the Local Itinerary to "Follow 'Father Randall' to the sea," were so charmed by the attractions of Atlantic City that without exception they will, if offered an opportunity, vote for a convention there whenever it can be arranged for. It was a delightful side trip.

THE BUILDING OUTLOOK IN THE EAST.

The National Convention gave added evidence of the fact that the clayworkers of the United States have had an exceptionally prosperous season. Evidently, the prospect is good for a continuance of this happy condition. Nothing but a national calamity such as the cutting off of the coal supply, if the threatened strike of miners should come to pass, can disturb or check this era of prosperity. All sections of the country are flourishing. Building operations are remarkably active in the East, so much so that at the present writing, a brick famine is threatened. Evidently, concrete construction, good or bad, has as yet had little or no influence in the building markets of that section. According to information which comes from a majority of yards in the Hudson River district, there is real danger of a brick famine during early spring. Few of the yards have any brick on hand to speak of, and these are under contract, and will be delivered as soon as shipments can be made. This is remarkable when it is remembered that there were more brick made last year, by many millions, than ever before. The season was longer, brick were made a full month later than is usual in a number of localities. Perhaps the lengthening of the season is partially responsible for the present shortage, for the warm weather which enabled the manufacturers to run their plants, permitted builders to continue their operations, and so millions of brick were used, which under normal conditions would have been held over for spring use. Barring serious strike troubles, the coming season is evidently going to be an extremely busy one. Unless all signs fail, 1906 will be the best year that brickmakers of the East have ever known, and in a measure this condition prevails throughout the land.

THE SOUVENIR BADGE.

THE BADGE OF MEMBERSHIP presented to visitors by the Philadelphia Committee was both very pretty and very appropriate, as the reader may see from the accompanying reproduction. The pin at the top represents Independence Hall in miniature, while from the tri-colored ribbon, which bore the inscription of the occasion and date, was suspended a replica of the old Liberty Bell. In every detail it was an artistic production, and is a souvenir to be prized by every member. There was an urgent demand for extra badges to meet which an additional supply was ordered by the Secretary, so that members who were not present, but desire to add this badge to their collection of convention mementoes, may secure same from the Secretary. Members who have so far neglected to renew their membership are requested to do so at once. By so doing they will facilitate the work of issuing a new up-to-date Pocket List of Members. Those wanting badges will please mention that fact when remitting their fee, as they will only be sent on request.



Souvenir of Previous Philadelphia Conventions.

The badge is in marked contrast with the souvenir of the former Philadelphia convention—a lapel button of oxydized silver, in the form of a brick bearing the initials of the Association. Mr. Murrell Dobbins, who served so ably as the Chairman of the Entertainment Committee at the previous convention, has generously furnished the Secretary with a quantity of the buttons to be distributed to those who attended the first Philadelphia meeting who may have lost their original button, and desire to duplicate it. These too, will be sent on request only, made to the Secretary.

NEWS NOTES.

Lena, Tex., is to have a new brick plant for the manufacture of brick, both building and paving, hollow brick and enamelled brick. New York capitalists are interested.

John Wagner, an employe of the Shull & Badger Brick Co., at Butler, Pa., was caught in a cave-in at the clay bank and so badly injured internally that he died in a very short time after being taken to the hospital. He was forty-seven years old and leaves a wife.

Preparations are about ready for the burning of the first kiln of tile at the plant of the Fort Bend Brick & Tile Co., at Rosenberg, Texas. Mr. G. W. Songer says they now have enough orders for tile booked to keep them busy for some time to come.

WANTED, FOR SALE, ETC.

WANTED—Second hand disintegrator or pug mill for plant of 20,000 capacity. Also friction hoist. Address R. A. P.
2 1 c Care of Clay-Worker.

WANTED—Two front brick setters and 2 common brick setters. Steady work year round. QUEENS COUNTY BRICK MFG. CO.,
2 1 c Farmingdale, Long Island.

FOR SALE.
One Fernholtz Clay Mixer, absolutely new; has never been used. Will sell reasonably. For further particulars write
THE HARTFORD FAIENCE CO.,
2 1 d Hartford, Conn.

WANTED—Position as setter or burner of soft mud brick, with a good yard. Either Kentucky, Indiana or the South. References furnished and required. Address,
L. C. GILMORE,
2 1 cm Owensboro, Ky.

WANTED.
Manager for Brick Plant, at Thurber, Texas. Capacity of plant 100,000 dry pressed and 75,000 paving brick daily. None but men with large experience, ability and sobriety need apply. Address W. K. Gordon, General Manager, Thurber, Texas.
2 3 d

FOR SALE—First-class dry press brick plant, located at Springfield, Mo. Boyd four-mold press, Frost nine-foot dry pan, one Dunlap screen, 25 H. P. engine, 60 H. P. boiler; and trucks to handle 22,000 brick. For sale cheap. Address,
GEO. D. McDANIEL,
2 3 cm Springfield, Mo.

FOR SALE—160 acres fine flint fire and silicious clay land one-fourth mile from Wabash railroad, 35 miles from St. Louis. The clays have been tested with excellent results. The fire brick testing 2500 degrees. Abundance of shale beneath clay. Water at hand. Apply to R. F. HENSELL,
2 1 cm O'Fallon, Mo.

WANTED—A competent kiln burner, one experienced with down-draft kilns with open and closed fire boxes and the burning of vitrified brick and tile, for a large brick yard in Kansas. One willing to interest himself financially preferred. Best of reference required. Address,
POST OFFICE BOX 386,
2 1 e Pittsburg, Kansas.

GOOD CHANCE FOR A HUSTLER.
A sand-lime brick business in the Northwest, been running now two years, wants a man capable of taking full charge of plant. Are agreeable to give the right man stock in the company. None but capable men need apply. Give full particulars, with application, to, BRANDON,
2 2 dm Care Clay-Worker.

WANTED—Position as superintendent, 20 years experience. Strictly sober and fully capable of handling plant, making shale, pressed, hollow dry press, hollow and common brick, tile or soft mud brick. Specially successful in burning common and up-draft kilns. Coal, wood or gas. Would like to correspond with responsible parties. Will let entire year's salary remain in business. Guarantee all work undertaken. Will get results or no pay. Address F.,
2 1 c Care Clay-Worker.

For Sale, Wanted, Etc., Ads Continued on Pages 384 and 386.

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The Richardson-Lovejoy Engineering Company, Successors to W. D. Richardson, Consulting Engineer to the Clay Industries. See page 367.

The Raymond Open-Air Drying System.

We beg to announce that we have added to our already large line of Clayworking Machinery and Supplies an Open-Air System of Drying Brick.

This system contemplates the use of the McKenzie Patent Elevating Brick Car.

Our printed matter is subject to your command, in the form of Exhibit Sixty-three, which enters into detail.

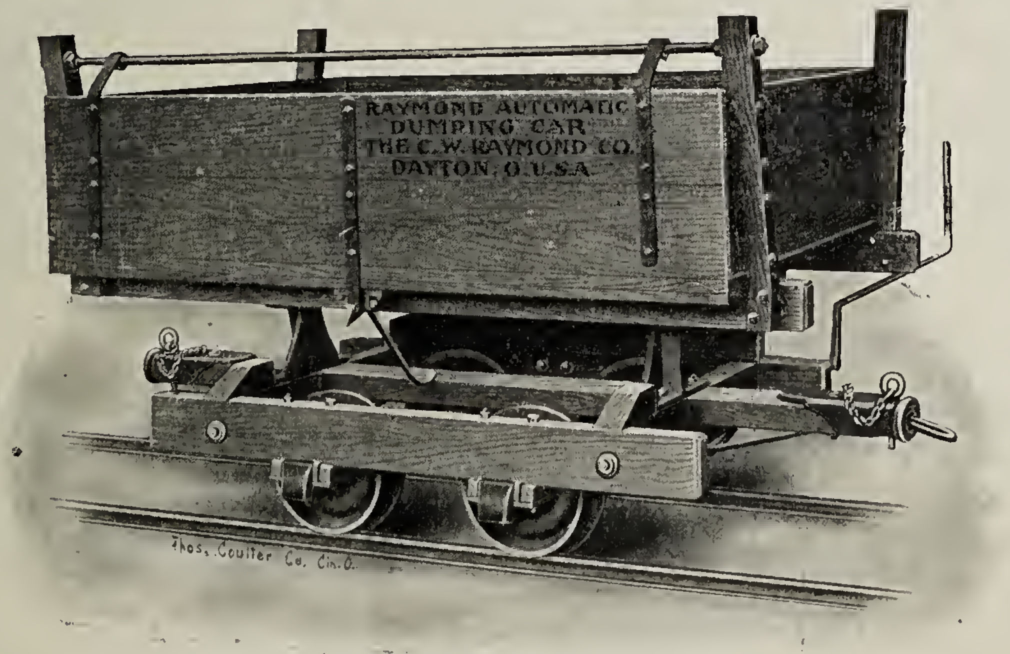
The C. W. RAYMOND COMPANY,
DAYTON, OHIO, U. S. A.

BRICKYARD SUPPLIES.

Our Brickyard Supplies are fully up to the "Raymond Quality," so favorably identified with Raymond machinery.

We manufacture a complete line of supplies, as well as equipment for hand and power yards, for use with soft and stiff mud systems.

Our Catalog is free for the asking.



RAYMOND AUTOMATIC SIDE DUMPING CAR.

- Brick Machines
- Dry Pans
- Pug Mills
- Cutting Tables
- Represses
- Conveyors
- Elevators
- Dumping Cars
- Hoists
- Trucks.

THE C. W. RAYMOND CO.
Dayton, Ohio, U. S. A.

Written for The Clay-Worker.

KANSAS CITY BRICK AND BUILDING NEWS.

THERE HAS BEEN no weather this winter to interfere greatly with building operations in this city. We had the first zero weather one week ago, but since it only lasted an hour, and has been growing warmer ever since. The season is so well advanced that it is evident there can be but little weather now that will stop building operations, and with the start already made, it is evident that we are going to have quite a building boom this year.

Several large office buildings are already planned, and the foundations being prepared, and they will make rapid progress as soon as spring opens. The latest additions to the office buildings for the year is a twelve story building to be built on the northwest corner of Tenth and Walnut streets.

Among the manufacturing plants contemplated which will make use of many brick are additions to the packing houses. There are a number of large new buildings to be added to several of the packing plants.

A number of railroads are figuring on doing much brick paving in their yards, and some of this is expected to be started within the present year.

The City Engineer should at once prepare a standard for brick paving, including a test of toughness and a guarantee of lasting qualities, and then get some brickpaving manufacturers interested. The city has no decently paved brick streets to show what a really good street is, but the engineer can make specifications which will guarantee a good street and then the brick men will have an opportunity to make their showing. That is all that is needed to make the paving popular. The only complaint made against a good brick pavement is the noise, and with the blocks used nowadays, the noise is largely eliminated, where the brick are laid on a concrete base and with cement, as it makes a very solid surface.

The General Manager of the Metropolitan Street Railway Company has petitioned the Board of Public Works for permission to pave between the tracks with brick wherever new paving is to be laid. He evidently knows the worth of good brick paving.

One of the local papers last week made an assertion which will not hold good. It stated that all building material was advancing at a rapid rate, and that if the "combine" kept it up, building operations would soon have to cease. The fact of the matter is that brick can be bought at the same price they have sold for the past several years, and the price is low, being $7.00 to $7.50, delivered on the job for common brick, and face brick are not higher than several years ago. Lime is some higher, but on the other hand, plaster is considerably lower. Builders' hardware may be a little higher, but not a great deal. Lumber is of course higher. It has been steadily advancing, and will probably continue to do so. Architects are now eliminating lumber from buildings as much as possible, on account of the upward tendency in the price. There is really nothing in the building material line to make builders hesitate about investing. The only building material advanced is likely to continue to advance, so waiting will only increase the cost of the building, instead of diminish it.

The building permits for the month of January would indicate that the builders are not afraid to invest their money in buildings, as they foot up nearly double the permits for the same month of last year. The total for the past month is $631,410, as compared with $320,250 last year. Of this amount there was $406,200 to go into brick buildings, $163,100 into frame buildings and $62,110 into miscellaneous building. The Superintendent of Building stated that he would not be surprised if the cost of buildings would average $1,000,000 per month, from this time forward for balance of year.

The brick men are most of them firmly convinced that the trust will be formed, and that the first of April will find them handing over their holdings to the new company. If things do not come to a head at that time there will be nothing more thought of it, for all consider that with the last extension of time there has been ample time given to figure over exact conditions and make all necessary estimates. Some of the brick people are anxious to have the sale go through, but the majority of them are rather indifferent, feeling that the plants could probably make more money if they were under one management, but as they do not care to be minor stock-holders, they know that they would be entirely out of the brick business as soon as the sale was made, and they are not entirely satisfied to sell.

The Waverly Brick and Tile Company has been incorporated in Kansas City, Mo., with a capital stock of $20,000, by J. H. Looney and others. The plant is already in course of construction, and will begin operations in the spring. It is located at Waverly, Mo., and a large part of the machinery has been secured from a plant which has discontinued operations in La Harpe, Kas.

The National Vitrified Post Company has opened an office at 421 New Ridge building, with N. W. Hackett as president, E. A. Holtz, secretary and treasurer, and R. L. Dennison as general manager, and they will sell a vitrified fence post.

The Pittsburg Brick Company has closed a contract for furnishing 1,450,000 brick to Shawnee, Okla., to be used in paving the streets of that city.

F. L. Joy, who was formerly manager of the Kansas City office of the Hydraulic Brick Company, but went from here to St. Louis, to take the place of second vice-president of the company, lost that place at the meeting of the board of directors of the company last month, as the office was abolished. It was at first intended to give him the management of the Chicago office, but the plans were changed and he was sent back to take charge of the Kansas City office again. This necessitated the transfer of Manager F. H. Dukes to the Omaha office, and the local builders and contractors have become so much attached to Mr. Dukes, and he has made so many warm friends among them, that they not only got up a petition to the St. Louis office, asking his return to Kansas City, but also passed a resolution at their last meeting, endorsing him. He is a man of exceptional ability, has had long experience in the brick business, is thoroughly acquainted with all parts of the work and all needs of his customers.

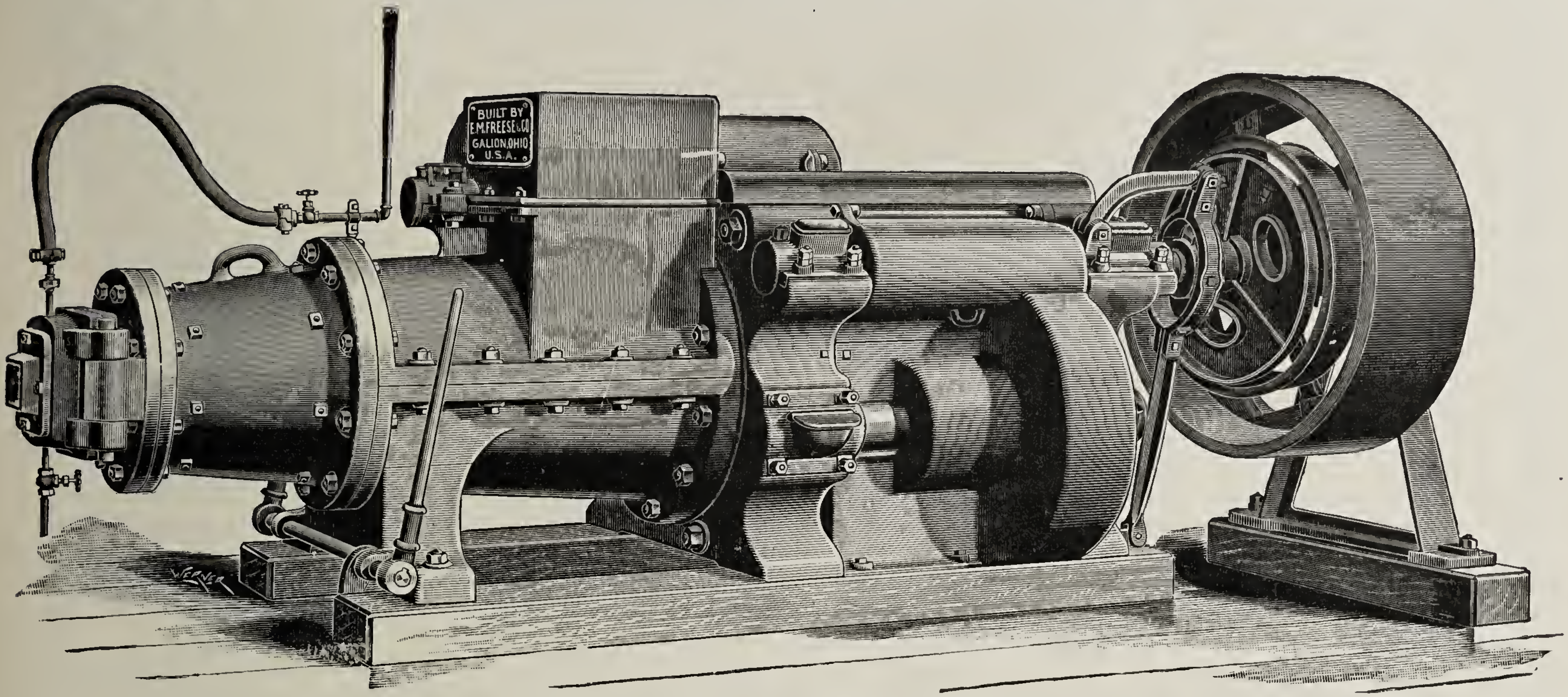
The Eadie Building Supply Company has just secured the agency for the Ayer-McCarel Clay Company, of Brazil, Ind., which manufactures an impervious vitrified facing brick, gray, gray speckled and buff in color, also a glazed brick and vitrified building blocks. This should be a good market for their product, as Mr. Eadie is thoroughly acquainted with the smoke producing qualities of the local chimney, and the fact that a light colored brick will wash off as clean as when first laid is a talking point that he will not fail to bring before the builder, especially when he can make a price that is more satisfactory that the regular face brick of the same colors.

C. A. W.

THE NATIONAL PAVING BRICK MANUFACTURERS' ASSOCIATION.

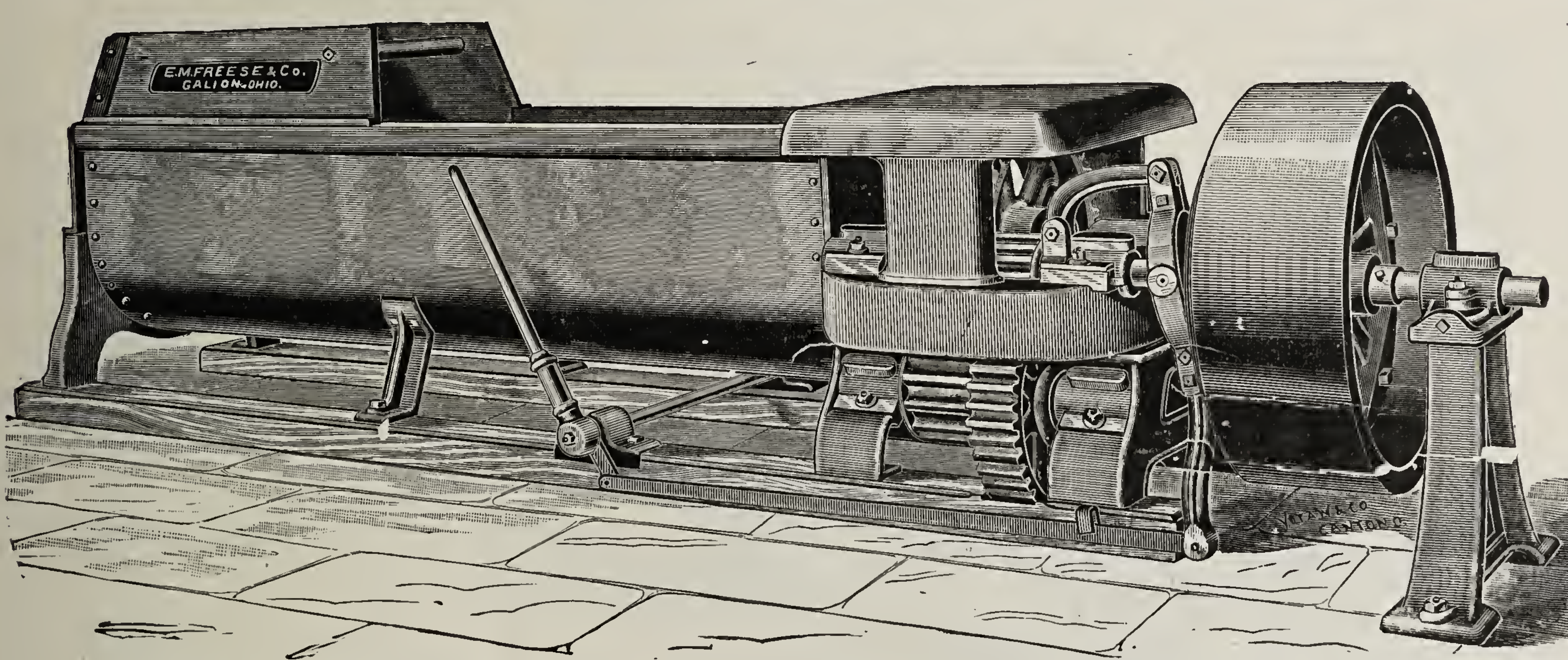
The Paving Brick Manufacturers held several executive sessions during the National Convention at Philadelphia. The objects and purposes of the Association are to promote the use of vitrified brick along educational lines, and they are doing it effectively. The officers of the Association are, President and Corresponding Secretary, Will P. Blair, Terre Haute, Ind.; Vice-President, Will S. Purington, Galesburg, Ill.; Treasurer, Charles M. Crook, Youngstown, Ohio; Secretary, Spencer M. Duty, Cleveland, Ohio.

Our Mammoth Brick Machine



THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitetd for making a fine quality of brick.

E. M. FREESE & CO., - - Galion, Ohio.

Mention the Clay-Worker.

See Ads on Pages 442 and 443.

THE WISCONSIN CONVENTION.

THE SIXTH ANNUAL Convention of the Wisconsin Clayworkers' Association will be held at Menomonie Friday and Saturday, March 9 and 10. A very interesting and instructive program has been prepared and the local manufacturers will exert themselves to make the stay of the delegates both pleasant and profitable. A portion of one day will be devoted to a trip to the brickyards. The plant of the Hydraulic Press Brick Company, one of the largest and best in the State, will be in full operation. Menomonie is not only the great clay center of the State, but is also noted for its educational institutions. Its school of Manual Training and Domestic Science is one of the best of its kind in the country, and a trip through this and other similar institutions will prove interesting. Hotel Royal will be headquarters. The following subjects will be considered during the sessions: "The Use of Waste Heat from Common Up-Draft Kilns for Drying Brick, Versus Open Air Drying;" "Brick Versus Concrete;" "The Test of Wisconsin Brick;" "What Constitutes a Modern Brick Plant;" "The Benefits of Organization;" "Tile Drainage in Wisconsin;" and "Different Methods of Burning Brick and the Practicability of Each." For further particulars address J. G. Hamilton, Secretary, Grand Rapids, Wis.

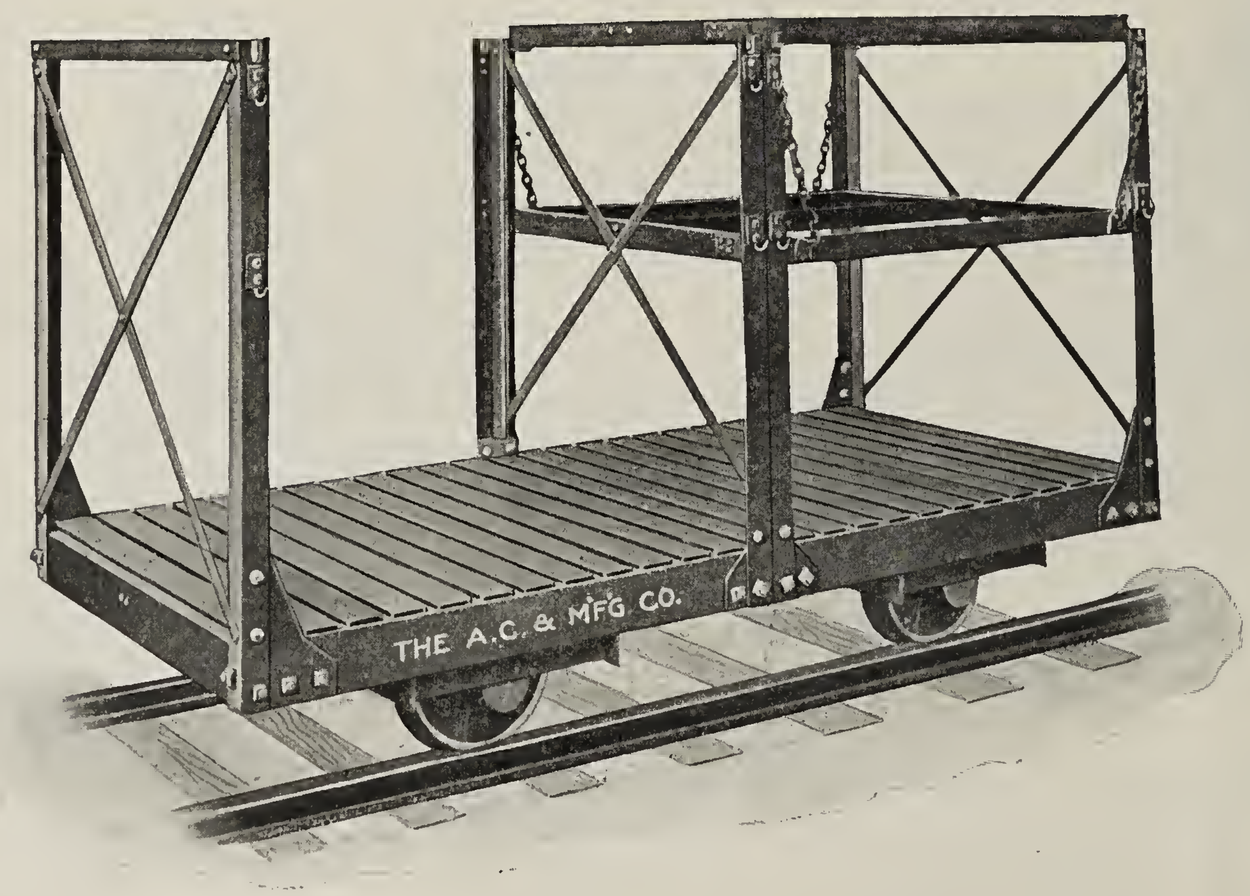
BRICKYARD EMPLOYES UNEARTH INDIAN BURYING GROUNDS.

The Remillard Brick Company's employes recently discovered that a great burying ground of a long departed race was located within the limits of the company's yards near San Jose, Cal. The discovery was made in the banks of the big clay pit. Alfred Bowen, the chief blacksmith and other employes, uncovered a plot of ground which has been the scene of an ancient barbecue. The remains of a great campfire were found. Nearby were the bones of several beeves and a number of stone utensils. Crowds of curiosity seekers visited the Indian burial grounds but the only systematic exploration that was allowed was conducted by a party of students under the leadership and direction of W. H. Merrill and E. Lamb of Sanford University. These men succeeded after several hours in uncovering a giant skeleton, which from its surroundings and isolation from other skeletons was evidently that of a man of some prominence among the people of his time. As was the case with all the other skeletons uncovered, this one was covered over with a blanket of small stones to a depth of some six inches. In this case, however, the stones were of a bright hue, white, pink and reddish rocks having been picked out for the grave cap of the dead chief or whoever he may have been. Over the center of the grave and beneath the covering of small stones was a large stone mortar or meal pot. It is of granite and ground perfectly smooth both out and inside. No pestile was found with this mortar, but nearby was a long bladed knife of flint, the handle of which had evidently been bound with rawhide or deer throngs. The handle was in fair state of preservation. The bones of the skeleton were much larger than that of the ordinary man, and indicated that the person in life was a veritable giant. For instance, the bones of the fingers found in a fair state of preservation were almost three times as large as is the hand bones of the average mortal.

The Carrollton Brick & Tile Co., Carrollton, Mo., has been succeeded by the Brick Mfg. Co. L. A. Harding has been elected general manager.

The Horatio Fire and Building Brick Mfg. Co. has been incorporated to manufacture brick at Horatio, Ark. The capital stock is placed at $100,000.

DRYER CARS


THE A.C. & MFG. CO.

We have in stock for immediate shipment a large number of

Triple Deck Dryer Cars,

as per illustration herewith.

The decks are adjustable to any desired height and removable.

Cars are built strong and rigid and are very easy running.

THE ATLAS CAR & MFG. CO.,
CLEVELAND, OHIO.

"Getting the Most for a Dollar"

IS A DEFINITION THAT HAS BEEN GIVEN FOR

Good Engineering.

We do good engineering for the clay industries. We carefully and conscientiously investigate all propositions for investment in the manufacture of clay products, exploiting and testing clay deposits, examining facilities for manufacture and market requirements and local conditions affecting any special case.

We advise upon the proper method of procedure, the best processes of manufacture, the most practical plant for the purpose and the best equipment, making estimates of the cost of the proposed plant, and the profits that could be expected from the investment.

In the carrying out of favorable propositions, we design and superintend the construction of the plant, and help our clients to start right. We make a specialty of driers and kilns of all types, carefully adapting them to the conditions and requirements of every case.

We manufacture and import testing and controlling apparatus keeping a full line in stock; also books for clayworkers. We investigate and correct faults of manufacture, improve and remodel uneconomical plants and place them upon a paying basis.

Further information given upon applition.

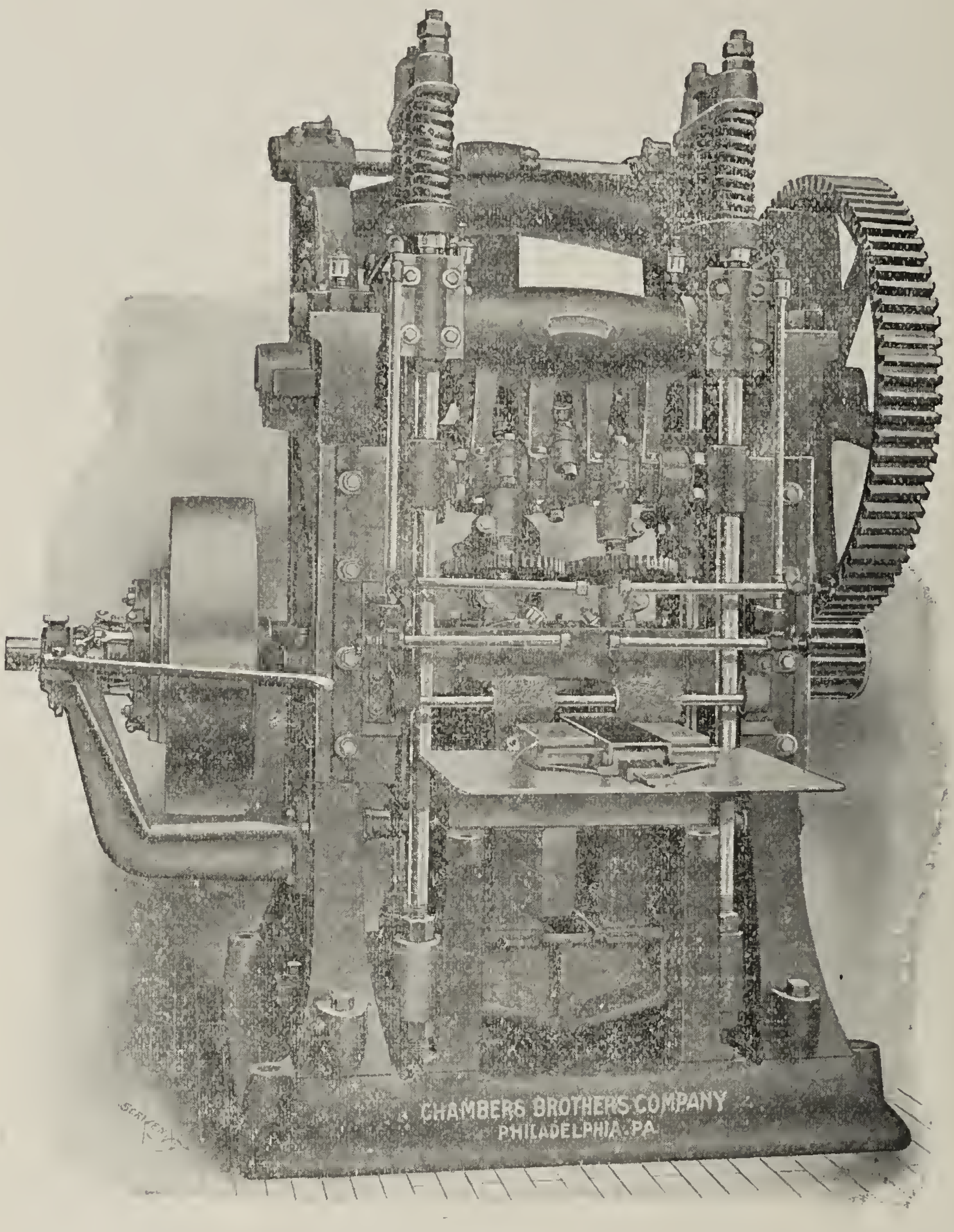
Richardson-Lovejoy Engineering Company,
COLUMBUS, OHIO.

Room for Another Repress?

TRY ONE OF OUR MAKE.

Weight about 11,000 lbs.

Capacity, 2,000 bricks per hour.



Single Crank Movement.

Working Machinery All Above the Mold Box.

THE PHILADELPHIA REPRESS

Built by

CHAMBERS BROTHERS COMPANY,

Fifty-Second Street, Below Lancaster Ave., PHILADELPHIA, PA.
E. R. FRAZIER, Chicago Agent, 59 West Jackson Boulevard.

CHAMBERS
BRICK
MACHINERY

End Cut and Side Cut

Auger Brick Machines

Automatic Cutters

Single and Double Shaft Mixers

Clay Disintegrators and Crushers

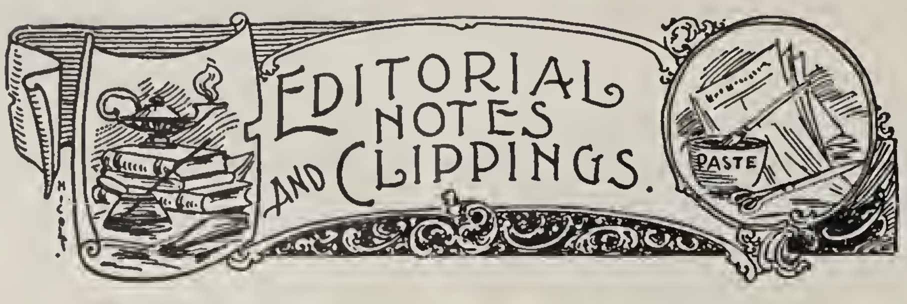
Dry Pans Clay Elevators

Granulators and Feeders

FULL GUARANTEE AND TRIAL

Chambers Brothers Company
PHILADELPHIA, PA.

1858 Continuously at it 1906



EDITORIAL NOTES AND CLIPPINGS.

Meridian, Miss., is to have a new brick plant.

Columbia, Ky., is to have a new brick plant of 50,000 daily capacity.

St. Joseph, Mo., wants another brick and tile plant. Fred Roth is interested in the enterprise.

The plant of the Natches (Miss.) Brick & Mfg. Co., which was burned some time since is being rebuilt.

J. Taylor Roth, of Allentown, Pa., will retire from the brick business, owing to the fact that his clay supply is exhausted.

Watsontown, Pa., wants a first-class brick and tile plant, and will probably furnish a bonus to the right party. Wm. F. Shay is interested in the project.

Wm. E. Fitzgerald, Coxzackie, N. Y., has closed a contract with the Henry Martin Brick Machine Manufacturing Co., Lancaster, Pa., for one of their Martin dryers.

The Whittier (Cali.) Brick Company has been incorporated by John, E. M., C. L., and Eugene Cole, and Frank Stetson, all of Whittier. They certify to $25,000 capital stock.

The DeNoyelles Brick Co., has been incorporated at Haverstraw, N. Y., with $60,000. The directors are David DeNoyelles, Martha R. Anness and J. L. DeNoyelles, all of Haverstraw.

W. O. Bunnell, of Conynghan, Pa., writes that he has an excellent bed of clay comprising 200 acres, 33 feet deep. He expects to put up a plant of 50,000 daily capacity, and will make terra cotta as well as fire-proofing.

The Iola Brick Company, Iola, Kans., has just shipped the first installment of brick on the 1,000,000 brick order they have for the new sugar refinery at Garden City. They will continue shipments regularly now until the order is filled.

The Marysville Clay Manuracturing Co., Marysville, Ohio, has been incorporated by B. M. Rutan, N. E. Ligget, H. E. Conkright, Thos. Sharer and W. C. Fulington, with $30,000 capital stock. They will manufacture brick and other clay products.

At a recent meeting of the stockholders of the Charles Kraatz Brick Company, it was voted to increase the capital stock of the company to $100,000. Edward Uhrig was elected president, Edward Schroeder, vice-president and Emil Kraatz, secretary.

The Ross-Keller Triple Pressure Brick Machine Co. of St. Louis, Mo., has just shipped a complete four mold outfit to the Southern California Brick Co., of Los Angeles, Cal. The machinery will be installed as soon as it arrives and the company expects to have the plant in full operation by April 1st.

George F. Richards, secretary and treasurer of the Hamburg Vitrified Brick Co., Hamburg, Pa., sends in his subscription to the Clay-Worker, and says they are ready to rebuild their plant which was burned down December 3d, and are in the market for all the machinery and appliances for a modern plant, and want to be ready to take care of their spring trade.

George W. Ford, of Dover Point, N. H., is perhaps one of the oldest active brick manufacturers in the country. He is 82 years old and will operate his plant at Dover the coming year as usual. Last season, he decided he would take a vacation, and so closed his plant for the season, but when the time came, the desirt to make brick was so strong that he helped his neighbors in the work of turning out their brick,

Messrs. Brower & Best, proprietors of the Alden Brick Works, at Thompsonville, Conn., are making enlargements and improvements which will greatly increase the capacity of the plant. The annual output of brick is now about 2,500,000, but when the changes are effected the capacity will be increased to nearly 12,000,000. A dryer is being installed, and will enable the plant to operate in winter as well as in summer. Another feature of the improvements will be the tripling of the capacity of horse-power. The enlargements will be completed by April.

The Northwestern Tile and Clay Products Company has been incorporated at Des Moines, Iowa, with a capital stock of $25,000.

The new brick plant of Storer & Miller at Louisville, Miss., is rapidly nearing completion, and will have a capacity of 50,000 brick per day.

The Allegheny Brick Company is a new concern recently organized at Covington, Tenn. J. T. Fudge, G. A. Revercomb and C. W. Rush are interested.

The Gifford Brick Company, Gifford, Idaho, reports that it has a busy season ahead, now having on hand orders that will keep the plant running steady for at least three months.

Calvert & Leek, brick manufacturers of Ogden, Utah, who recently spent $10,000 in improving their plant, now have an option on an additional tract of land, comprising five acres of excellent clay land.

The F. H. Brockett Brick Company of North Haven, Conn., has been incorporated, with a capital stock of $10,000. The incorporators, all of North Haven, are Frederick H. Brockett, Charlotte T. Brockett and Myron R. Brockett.

J. E. Carson, of Charlotte, N. C., is at the head of a company that will erect a modern brick plant at Stout, N. C. J. E. Houser, a well-known colored brick manufacturer of that district, will have charge of the plant.

R. L. Davis, of the Davis Brick and Tile Works, Tampa, Fla., in renewing his subscription to the Clay-Worker advises us that the Florida plant has been sold, and they will build a modern up-to-date plant in Southern Georgia, with a capacity of 50,000 to 100,000 brick per day.

The City of Allegheny, Pa., has obtained an injunction against the Miller Brick Co., restraining it from removing earth or stone from the property of the company within 100 feet of the western line of Federal Street Extension. The city claims that the company has been undermining the city streets.

The Fond du Lac Pressed Brick Co., Fond du Lac, Wis., is making a number of improvements in its plant, including the installation of a new Boyd brick press, and an additional boiler. When the improvements are completed, the plant will have a capacity of 40,000 pressed brick and 15,000 common brick.

Knight & Gilbert is the style of a new firm which has been formed at Bowling Green, Ky., which will take charge of the brick plant formerly owned by George I. Knight. The new firm will make extensive improvements in the plant and install new machinery and appliances and have everything in readiness for the spring trade.

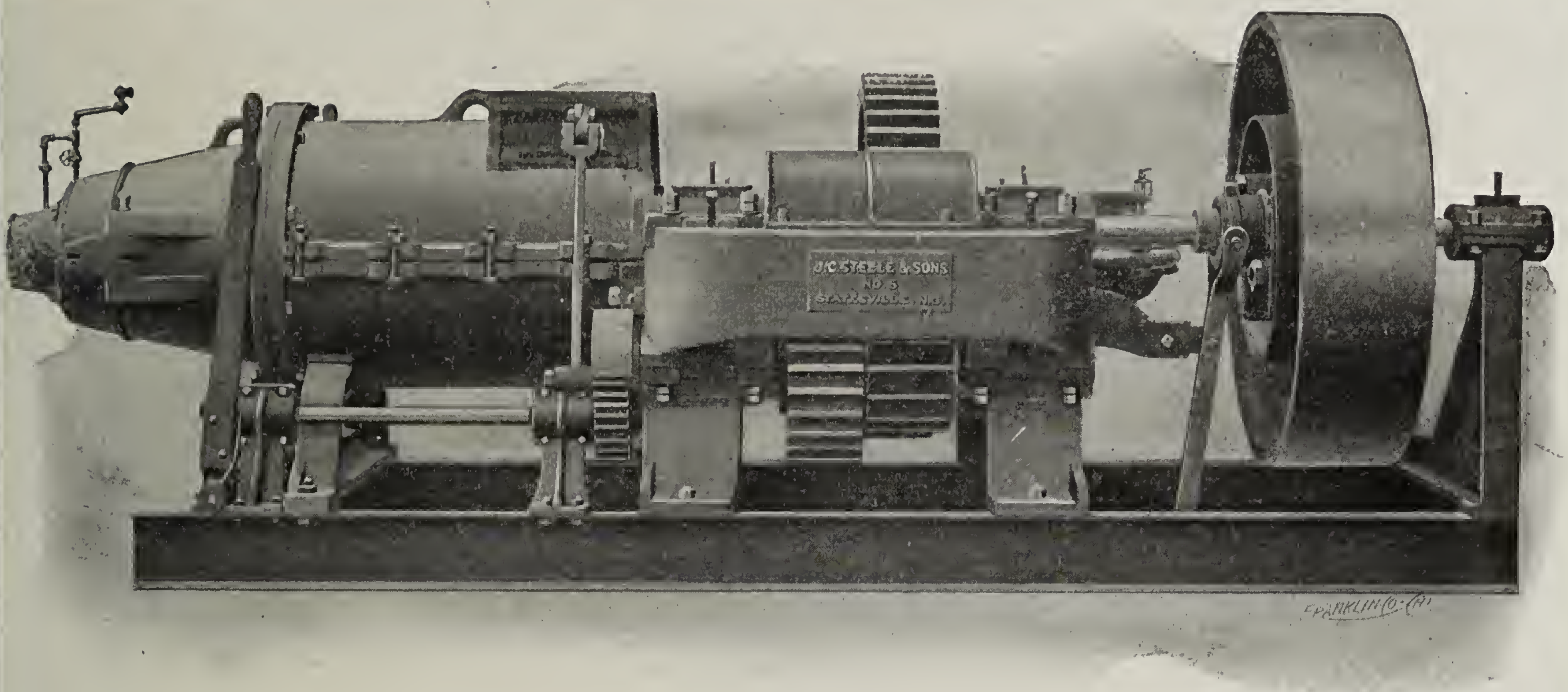
At the annual meeting of the Donnelly Brick Company of New Britain, Conn., held recently, a semi-annual dividend of 3 per cent. was declared, and the following officers elected for the ensuing year. President, T. H. Brady; vice-president, J. M. Curtin; secretary, James Roche, and treasurer and general manager, Patrick McCabe.

We are in receipt of a letter from Bechtel Bros., Waterloo, Ontario, stating that the partnership existing between them as brick manufacturers has been disolved by mutual consent. All claims against the old firm are to be presented to and paid by B. E. Bechtel. The machine business will be continued under the firm name of Bechtel Brothers, as heretofore.

Members of fire brick companies of Akron and Cuyahoga Falls, O. together with George W. Carmichel, a prominent contractor of Akron, and the manager of the Akron Brick Exchange, have been indicted, charged with forming a combination to fix and charge exorbitant prices for building and paving brick, and to prevent competition. The names of the manufacturers are William and John T. Windsor, Jr., Walter and Alfred Akers, William and Fredrick Kellar, Joseph, Samuel and William Cooper and John and James McCausland.

The old terra cotta works situated on Napa Creek, a mile north of Vallejo, Cali., has been purchased by J. Abrahamson of San Francisco for $10,000, and on March 1 it will be operated for the manufacture of a high grade of fire bricks. Mr. Abrahamson has organized a company of San Francisco capitalists and will enter extensively in the business of supplying the bay cities with this product. About fifty men will be em-

[Continued on page 374.]



No. 5. CAPACITY 50,000 to 100,000 PER DAY.

Built by people who have had 15 years experience with the great variety of Southern clays. Guaranteed the equal of any machine on the market.

Wetumpka, Ala., Dec. 19, 1905.

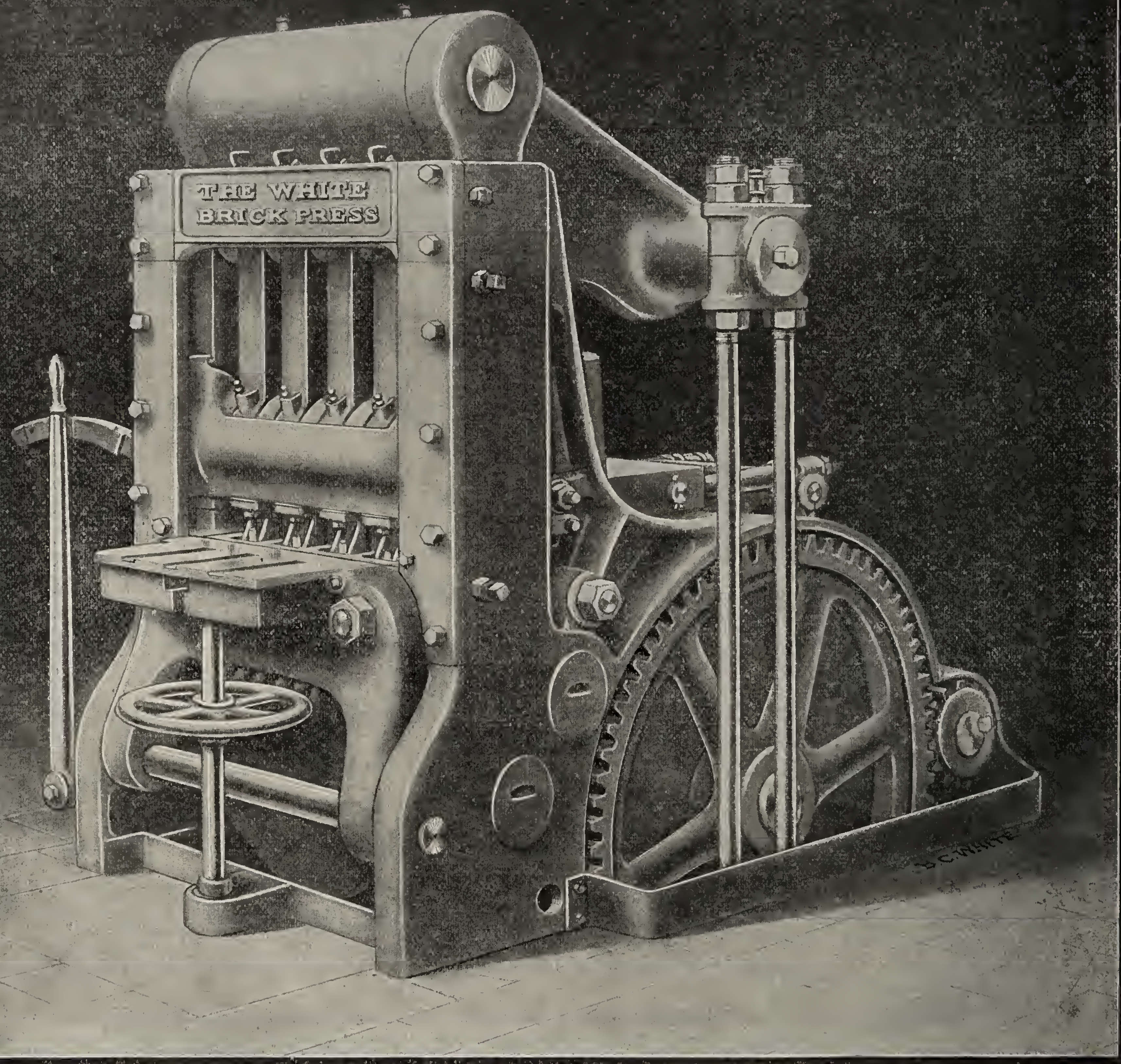
Gentlemen:—After using your machinery for some years, which included the Nos. 3 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly,
J. M. JENKINS.

J. C. STEELE & SONS, Statesville, N. C.

Success Brick Machinery Co., Memphis, Tenn., Western Agents.

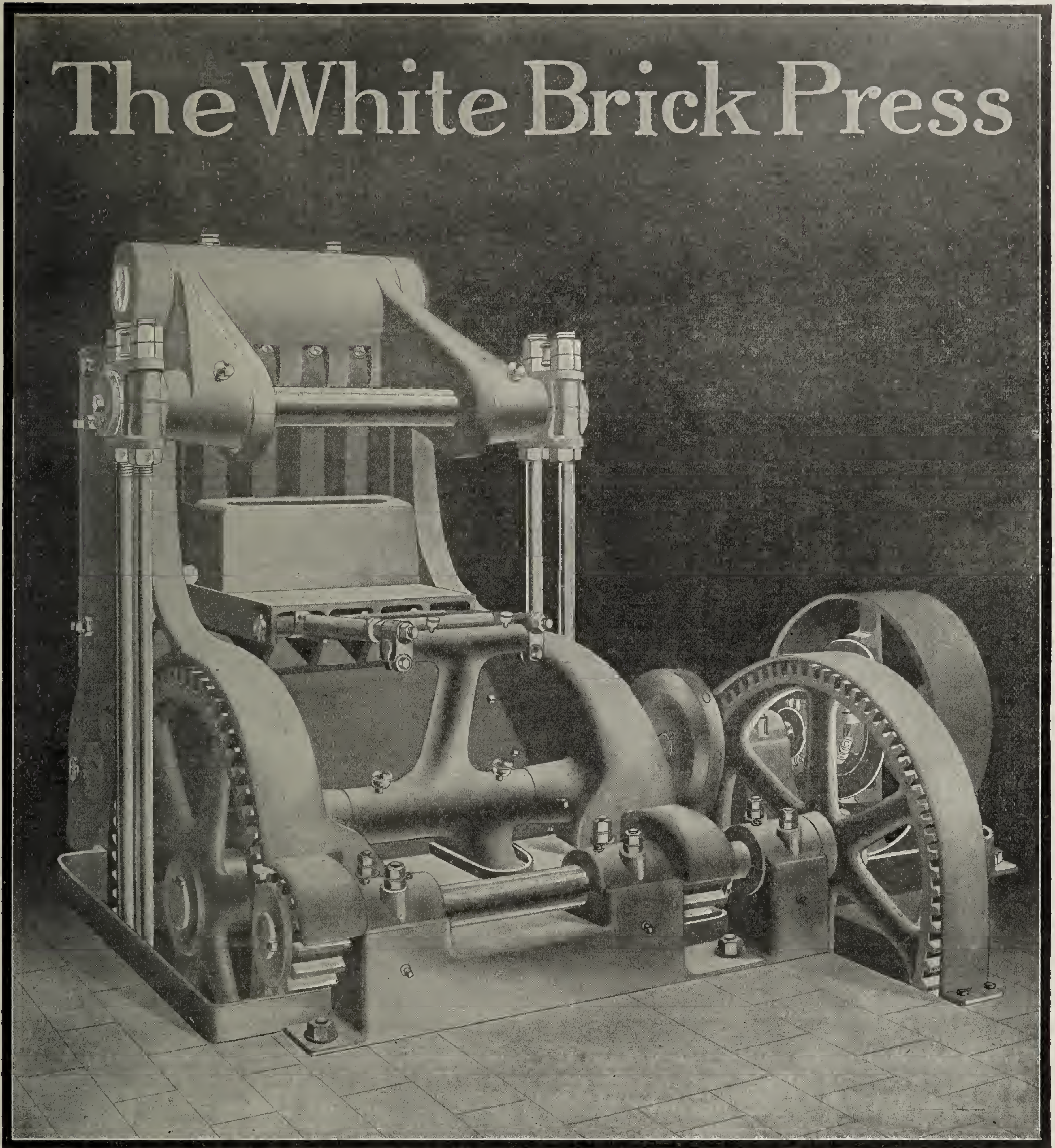
The White Brick Press



Absolutely new. Only Vertical Press ever designed especially for Sand-Lime Brick Making. Delivers perfect brick. Has HINGED MOLD TABLE and many other new features. Send for SPECIAL PRESS CATALOGUE.

American Sand-Lime Brick Co.,

1305 Great Northern Bldg., CHICAGO.



REAR VIEW.

This New Press is Superior to any other for making DRY PRESSED CLAY BRICK. Being designed for still heavier work it has a much larger factor of safety and is more desirable. All parts are easily accessible as shown above. Smooth running, without jar or backlash; powerful lift-out. Four distinct pressures, and longer dwell on the brick. Catalogue shows cuts of separate parts with information in detail.

American Sand-Lime Brick Co.,
1305 Great Northern Bldg., CHICAGO.

EDITORIAL NOTES AND CLIPPINGS—Continued.

ployed at the start and it is planned to increase the force later.

H. M. Johnson, of Gadsden, Ala., is making preparations to establish a brick plant at Attalla, Ala.

The McAlha Brick & Construction Co., of Lincolnton, N. C., has been organized by G. W. McAlister, C. H. Allister and Sumner Alexander.

Richard R. Morris, of Epping, N. H., has purchased the old Horne brick plant at that place, and will put things in shape to turn out 4,000,000 brick the coming season.

The Omara Brothers Brick Company has been incorporated to manufacture brick at Terre Haute, Ind. J. F. Omara is president and Daniel T. Omara is secretary.

The Louisville Pottery Company has been organized to manufacture flower pots and jugs at Louisville, Ky. They will incorporate with $100,000 capital stock.

The plant of the Pope-Gosser China Co., Coshcocton, Ohio, was almost completely destroyed by fire January 29, entailing a loss of $50,000. The fire originated in the basement.

A charter has been granted the Drew Brick & Tiling Co., of Monticello, Arkansas. G. W. Finn is President, and J. G. Williamson, J. R. Tarrant and W. M. Anderson, are directors. They are capitalized at $16,000.

The Hillsboro Brick & Tile Co., Hillsboro, N. D., has been incorporated with $15,000. The incorporators are E. C. Haagenson, N. H. Wold, L. L. Johnson, J. O. Lee, Ole Aastad, Esten A. Viker, Manick Skogen, Hillsboro, N. D.

An application has been made for a charter for the Keystone Fire Clay and Brick Co., of Fogelsville, Pa. A fine deposit of clay has been found on the property of Edwin C. Kramlich, and this company has been organized to develop it.

The Ulster Brick Company, of Newburgh, N. Y., has been incorporated with $50,000 capital stock. The directors for the first year are Frederick Wallace, Hiram Merritt, and Frank J. McCaw, all of Newburgh. The plant will be located at Ulster Landing.

Henson Bros., successors to Alfred Henson, have remodeled their plant at Hagerstown, Md., installing a couple of Martin machines from the shops of the Henry Martin Brick Machinery Company, Lancaster, Pa., which will give them a daily capacity of 50,000 brick.

David Stuempfle's Sons, Williamsport, Pa., will erect a brick plant of 30,000 daily capacity at that place. Work on the plant will begin as soon as weather conditions will permit. The firm has been operating a brick plant for the past thirty years, and the old plant will be abandoned as soon as the new one is ready for operation.

The Newton Fire Brick Company, of Albany, N. Y., has increased its capital stock from $100,000 to $350,000. It is understood that the expanding business of the company made necessary its increase in its capital, the company since it was reorganize some months ago having done a large and constantly increasing trade.

A. A. Gery, president of the United States Brick Company, Reading, Pa., has consumated a deal whereby the Seaboard Brick Company, of New York, one of the subsidiary companies of the first named corporation, will erect within six mile of Hoboken, N. J., a brick plant costing $1,500,000. The plant will be located along the Hackensack river, the company having purchased 700 acres of land for a site. It will have a capacity of 150,000,000 of brick annually, to be sold exclusively in the New York market. Building operations will be commenced in the early spring and the work completed as rapidly as possible.

Patrick Bannon, a pioneer brick manufacturer of Louisville, died at his home in that city February 6th at the age of 82 years. At the time of his death Mr. Bannon was at the head of the P. Bannon Sewer Pipe Co., and the Kentucky Vitrtfied Brick Co., of Louisville, and had the distinction of being the oldest manufacturer in that city. Mr. Bannon was a native of County Down, Ireland, from which country he migrated, locating in Louisville in 1852. He was a poor man when he started in Louisville, but by hard work and perseverance amassed quite a fortune. He was a member of the city council for years and for two terms served as president of that body. Six children survive him: M. Jeff. Bannon, R. B. Bannon, Patrick Bannon, Jr., Mrs. R. L. Burrell, and Mrs. Ed. B. O'Connor, of Louisville, and Mrs. S. A.. Hardesty, of Memphis, Tenn.

George Burnford is making preparations to erect a brick plant at Evanston, Wyo., the coming spring.

The Hollywood Brick Co., York, Pa., has been incorporated with $25,000 capital stock, by J. J. Landis, S. F. Glatfelter and James W. Kilgore.

The Leaksville Brick & Tile Co., of Leaksville, Miss., is the name of a new firm that will erect a plant for the manufacture of brick. N. Owen and G. G. Faulk are interested.

J. Frank Boyer is at the head of a new concern at Norristown, Pa., which has purchased the plant of Joseph K. L. Shantz at that place. The plant will be equipped throughout with modern machinery and appliances.

The Edwards Vitrified Brick Co., which was recently incorporated at Albion, Ill., and of which G. C. Zeigler is president, will at once begin work on the new plant which is to have a capacity of 30,000 paving brick, besides a large output of sewer pipe.

The plant and all of the property of the Diamond Brick Company, Akron, Ohio, has been purchased by the American Sewer Pipe Company, of Barberton, Ohio, for a consideration of $57,500. It is understood that the plant will be used for the manufacture of sewer pipe exclusively.

A new and up-to-date brick plant of 25,000 daily capacity is to be erected at Statesville, N. C., by the Statesville Brick Co., of which E. N. Morrison will be manager. The plant will be equipped with "New South" brick machinery from the shops of J. C. Steele & Sons, of Statesville. It has not been decided definitely as yet whether a dryer will be built, or whether they will dry in open air.

Gordon Bell has resigned his position as assistant general manager of the Ottumwa Brick and Construction Company, Ottumwa, Iowa, and will move to Omaha, Neb., where he will take charge of the new yard of J. Fred Smith as superintendent. This new plant is being equipped throughout with modern machinery and kiln, including a Dunn continuous kiln of 22 chambers. Mr. Bell made plans and built a Dunn continuous kiln at Ottumwa, which he operated successfully for six years.

The Lestershire Brick Co., Lestershire, N. Y., has been incorporated with $100,000 capital stock. The directors are C. Fred Johnson, Wm. H. Hill, W. N. Jones, W. H. Windus, of Lestershire, and T. R. Tuthill, of Birmingham. Our good friend R. G. Eisenhart, of Horseheads, has one-fourth interest in the concern, and will be the general manager. This is the equivalent of saying the success of the new plant is assured. They will at once begin work on the factory and expect to have same in operation by the middle of the coming summer.

Fiske & Company, Inc., of Boston is now installing at its plant at Dover Point, N. H., a complete set of new brick machinery, manufactured by Chambers Bros., Company of Philadelphia. This machinery is the largest and strongest which has ever been turned out at the Chambers' shops, and when installed will insure a production of from 60,000 to 80,000 side cut brick per day, or a yearly production of at least 15,000,000 brick. The product will be common, face and sewer brick. A new engine of increased power is also being installed and extensive changes in the kilns are being made. The electric traveling crane with the brick handling device, as patented by Parker B. Fiske will be used without any change, as several years' experience has proved that it is a thoroughly practical and efficient apparatus for the elimination of hand labor in brick making.

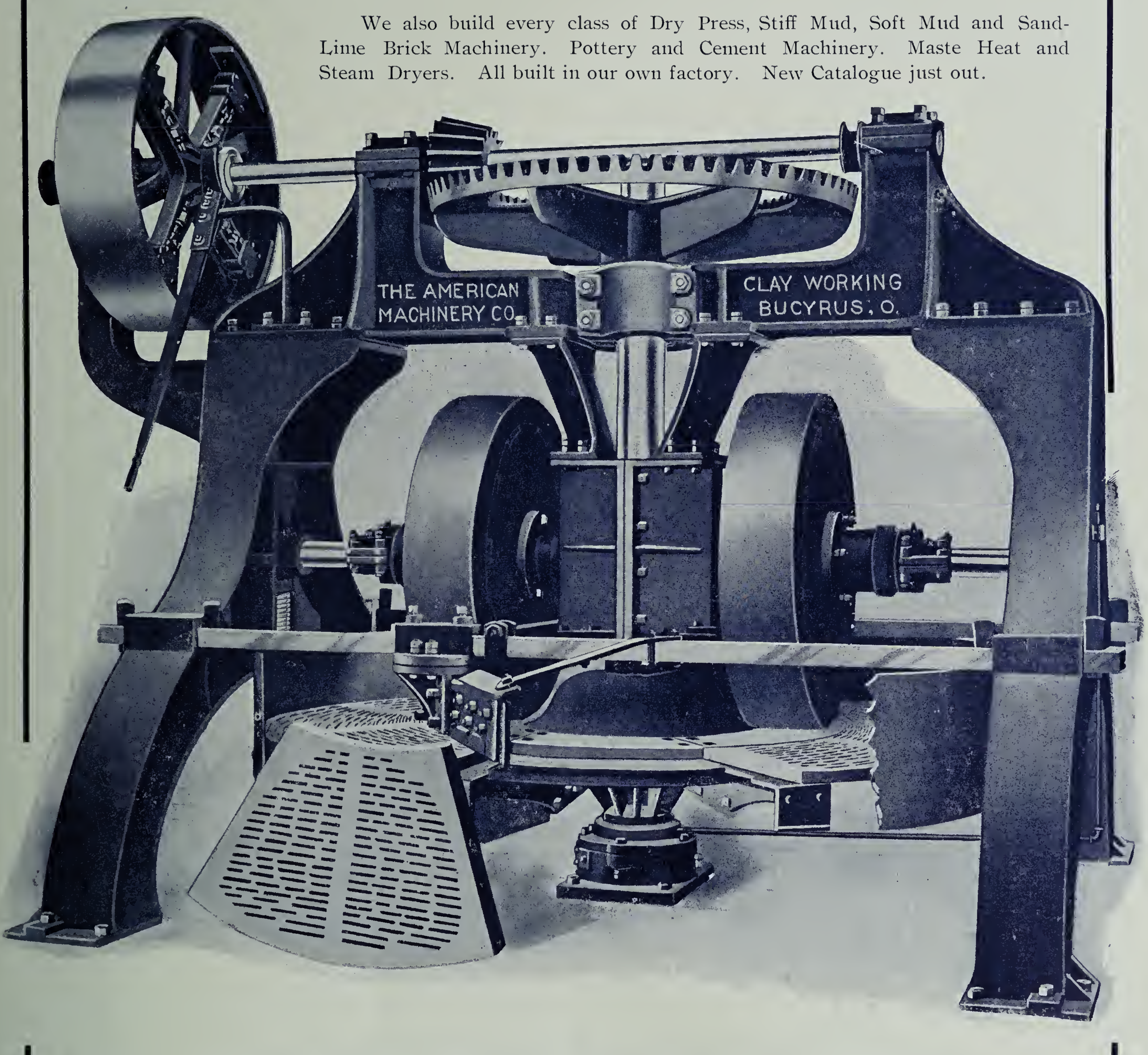
Edensburg, Cambria County, Pa., promises to take quite a spurt in the fire-brick business in the coming spring and summer, no less than three new companies that will deal extensively in this class of material, having made application for charters. While the operating plants of these concerns will be in Cambria County, it is generally believed that the general offices of all three will be in Pittsburg, which is the acknowledged centre of the industry. The companies will be known under the following names: (1.) The Cato Coal Company, incorporated by M. C. Carrigan, K. Connelly and W. B. Oakes, (2.) The Bald Hill Coal Company, incorporated by F. G. Smith, G. A. McLaughlin and Franklin D. Peale. (3.) The Smithport Coal Company, incorporated by G. E. Metzger, Leonard McKee and F. X. Carmody. All three companies will mine their own fire clay, and will engage extensively in the manufacturing and marketing of brick and other clay products, in addition to the coal business.

DRY AND WET PANS.

Built Right Run Right

Our Dry and Wet Pans are without equals in point of excellence and capacity. They are the heaviest line of pans built, a fact which should be closely considered as, in comparing prices with lighter pans, our standard pans would be unfairly treated. We know our pans to be superior in quality of material, workmanship, design and efficiency. The heavy side frames are substantially tied together at the top by the cross beam, in the center by tie bars and also on the floor line. The shafting is large and of steel. The gears are of special design and excellent quality. The bearings are long and well babbitted. The mullers are heavy, adjustable and removable. The screen plates and muller plates are made of special iron. The step is of our approved type, and the complete pan is one that can be depended upon under more than ordinary circumstances.

We also build every class of Dry Press, Stiff Mud, Soft Mud and Sand-Lime Brick Machinery. Pottery and Cement Machinery. Waste Heat and Steam Dryers. All built in our own factory. New Catalogue just out.


THE AMERICAN
MACHINERY CO.
CLAY WORKING
BUCYRUS, O.

The American Clay Machinery Company,

BUCYRUS, OHIO, U. S. A.

Economy a Burning Question

Economy is a burning question in any business but in the Brick business it has a double meaning because the fuel which you use in burning can be made to do your Drying without further expense. This makes one dollar do the work of two. By means of our Waste Heat Dryer we take the waste heat from any of your kilns and convey it to your Dryer to dry your product. We build all our own dryer apparatus and know its quality to be such that it will satisfy you. We buy nothing outside and are responsible for our apparatus. If your clay is tender we arrange a dryer accordingly. No matter what the properties of your clay may be we will dry it satisfactorily as we make all kinds of dryers in order that we may meet the requirements of every clay and we are thus not compelled to put you in a system, that may prove a failure, just because we want to make a sale. Our line of Dry cars is newly designed and built in our new car factory. We build a complete line of Clay Working Machinery and appliances. Send for new catalog just out.

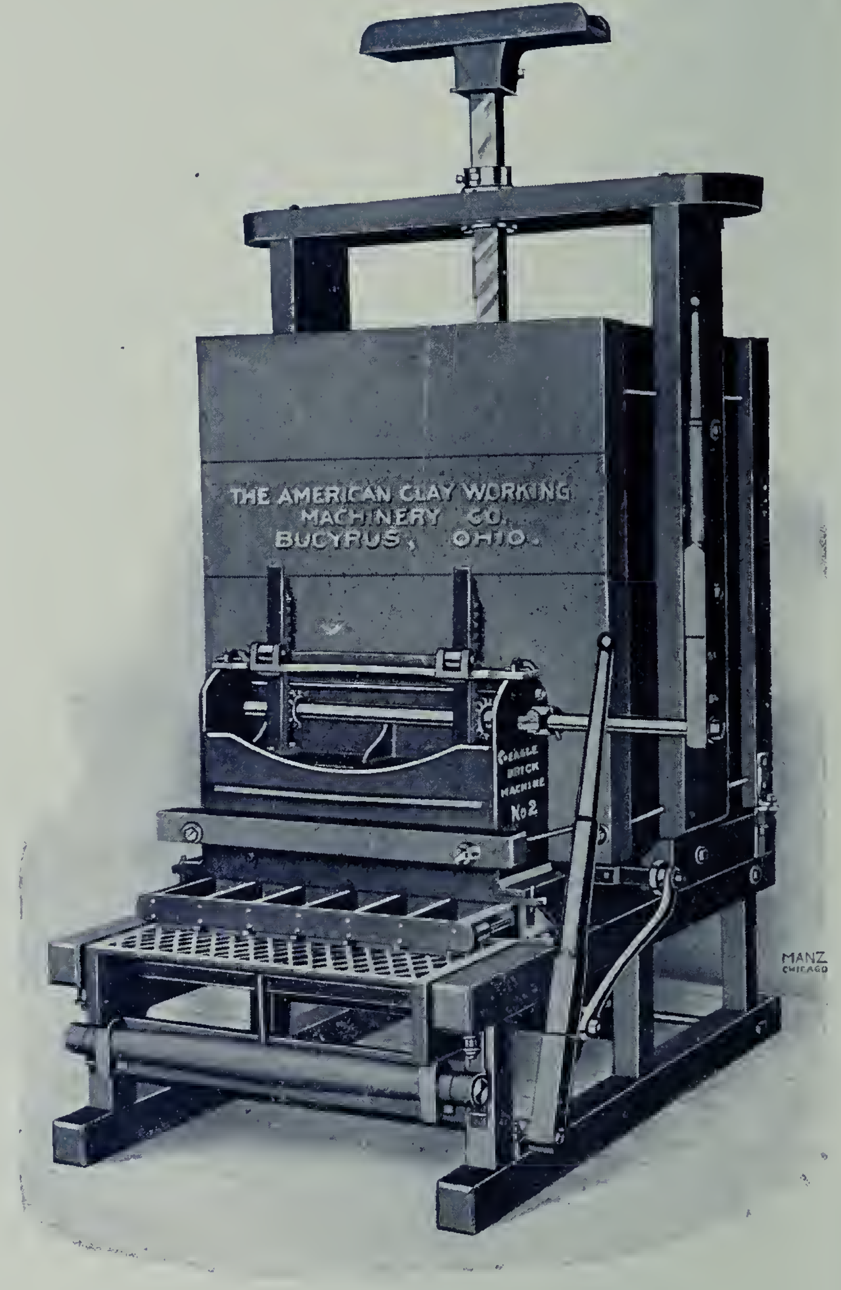
WE BUILD MACHINERY OF A QUALITY THAT LASTS

Built Right Run Right

The American Clay Machinery Co

BUCYRUS, OHIO, U. S. A.

Soft Mud Brick



We manufacture a full line of soft mud brick machinery and appliances, molds, mold sander, conveyors, barrows, trucks, crushers, disintegrators, etc. The size and capacity of these machines range from 1,000 to 4,000 brick per hour. We are prepared to fill your requirements and furnish a machine of a capacity suitable for your needs.

Our Eagle Horsepower Brick Machine has a capacity of 10,000 to 15,000 bricks per day. Our Eagle Steam Power Brick Machine has a capacity of 15,000 to 20,000 bricks per day. Our all iron Upright Stock Brick Machine and Pug Mill has an easy capacity of 30,000 to 40,000 bricks per day. These machines have been in constant use for more than fifteen years and have given universal satisfaction. The Upright Stock Brick Machine contains many features not found in any other machine of this kind.

It Will Pay You to Investigate These Special Features.

We also build a full line of Dry Press, Stiff Mud and Sand-Lime Machinery, also Sewer Pipe, Drain Tile and Pottery machinery. Write today for full particulars. No matter what you require we can supply it, furnished from our own factory, branded with our trade mark and covered by our guarantee.

A LASTING QUALITY IN MACHINERY.

Built Right Run Right

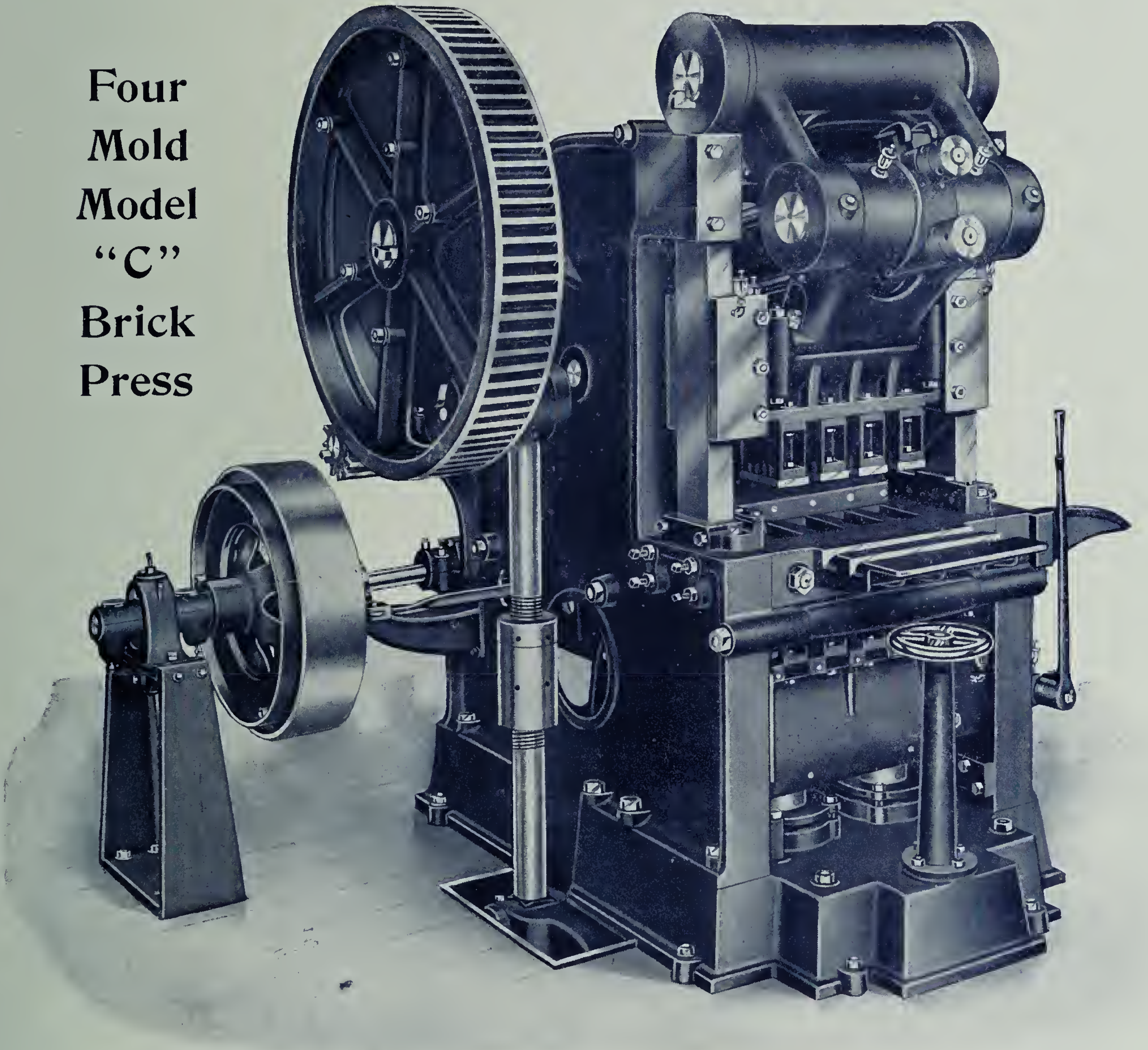
The American Clay Machinery Co.

BUCYRUS, OHIO, U. S. A.

MAXIMUM OF PRESSURE WITH MINIMUM OF POWER.

This press is massive in proportion but easy of motion. Excellent construction and care of detailed finish makes its operation perfect. Every part a perfect part. Every brick a perfect brick. Investigation is solicited. Ask for particulars and testimonials on this and any of the complete line of Clay Working Machinery which we build. New catalogue should have reached you by now. If not yet at hand write for it.

**Four
Mold
Model
"C"
Brick
Press**



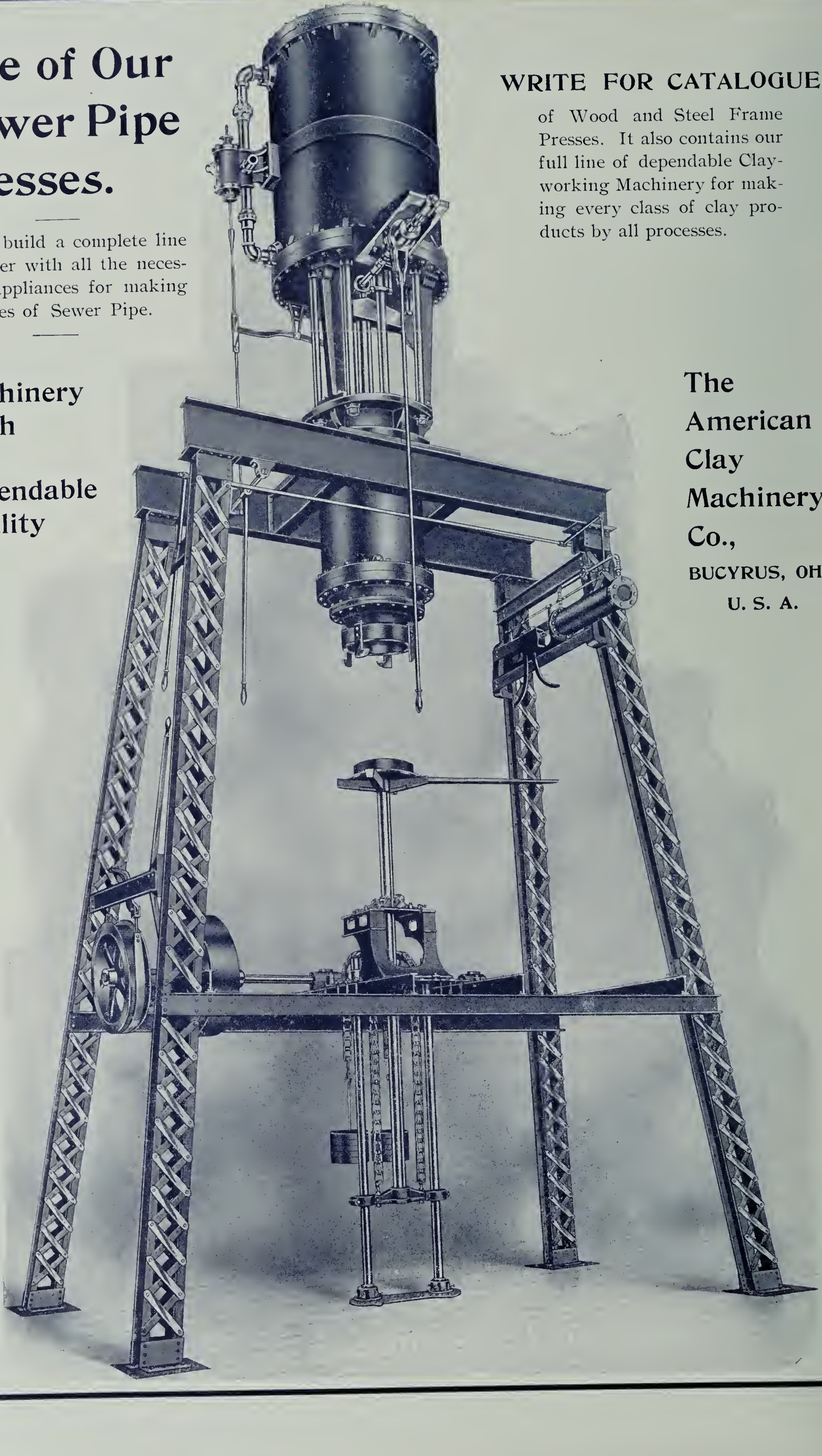
The American Clay Machinery Company,

BUCYRUS, OHIO, U. S. A.

One of Our Sewer Pipe Presses.

We build a complete line together with all the necessary appliances for making all sizes of Sewer Pipe.

**Machinery
With
A
Dependable
Quality**



WRITE FOR CATALOGUE

of Wood and Steel Frame Presses. It also contains our full line of dependable Clay-working Machinery for making every class of clay products by all processes.

**The
American
Clay
Machinery
Co.,**

**BUCYRUS, OHIO,
U. S. A.**

Made and Laid in a Single Day

PUSH THE BUTTON AND GET A BRICK MADE WHILE YOU WAIT

It's almost like "pushing the button and getting a brick" to manufacture them by the Sand-Lime process. It's much quicker than by the clay process. Brick made today can be laid to-morrow and collected for next day.

We build a complete line of machinery for making brick by the Sand-Lime process. Our line is just a little better at least than any other. We have given it a quality that can only be attained by years of experience in building brick machinery. This, coupled with the best of workmanship and material, gives you a value in your machinery which is much similar to an insurance policy as it is a preventive against accidents and a promoter of profits.

Write for our new catalogue on this class of machinery. It also shows our complete line of Clay Working machinery and appliances. It's a veritable Clay Worker's Encyclopedia.

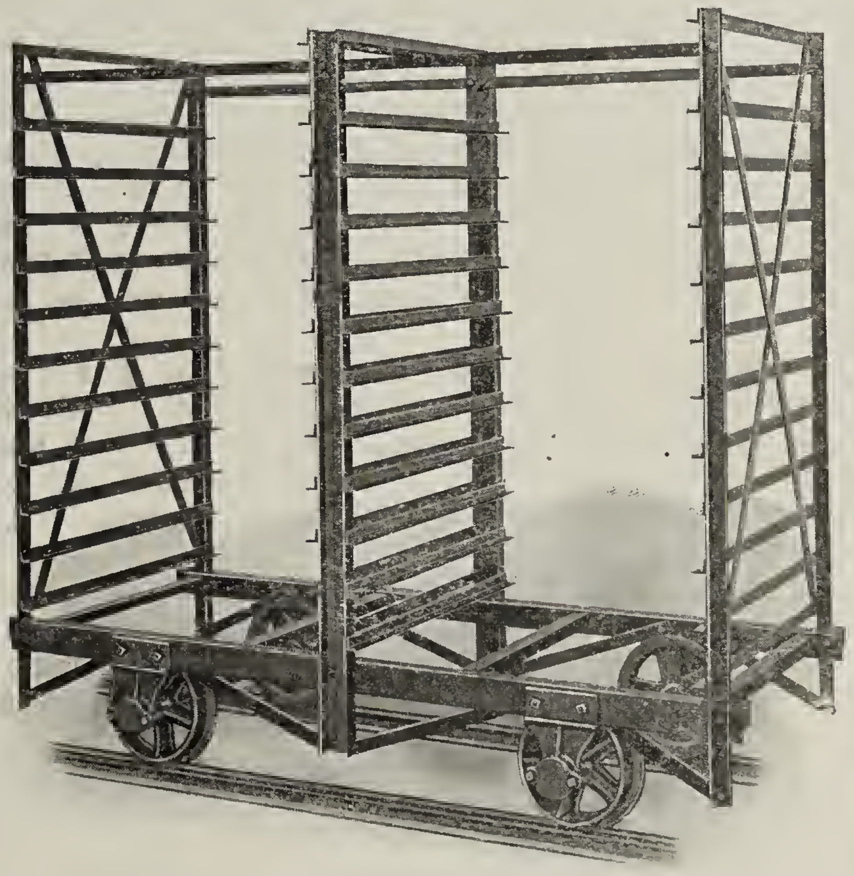
There is a Quality That Lasts in Our Machinery.

Built Right Run Right

THE AMERICAN CLAY MACHINERY CO.
WILLOUGHBY, OHIO, U. S. A.

New Cars New Shop

Our new line of Dry Cars is extensive in variety but of the uniform standard "Built Right, Run Right" quality. Our steel cars are built of structural steel, side rails tied with angles strongly riveted. Uprights are heavy angles riveted to gusset plates which are riveted to the side rails. The boxes are solid, bored and dust proof, fitted with steel pin bearings. The wheels are strong, cast, bored true and pressed on to turned axles. Every car perfect, easy running and durable. We also build a new line of cast iron cars. Our new catalogue, just out, shows our complete line of Clay Working Machinery. Write for it.



Built Right Run Right

THE AMERICAN CLAY MACHINERY CO.
BUCYRUS, OHIO, U. S. A.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

THE CARNEGIE Brick and Pottery Company, which has nearly completed a number of additional terra cotta kilns at Carnegie, Cal., has in plan six additional kilns that will be needed in order to take care of accumulated orders for firebrick. The firebrick demand is phenomenal, the brick being required for smelters, iron works, gas works and a great variety of other uses. The demand for terra cotta is good with excellent prospects based on the number of fine buildings projected in San Francisco and various other sources. The company's plant, two miles from Carnegie, is kept busy. The Western Pacific Railroad will pass through the large property holdings of the company near Tesla, and will be a great advantage to the plants. The railroad connecting Tesla with the main line of the Southern Pacific Railroad was purchased and a part of its roadbed will be utilized by the Western Pacific in approaching Stockton.

Weysel and Kock of Parral, Mex., have obtained a concession for the erection of a plant at Parral, for the manufacture of porcelain, fire clay goods and terra cotta. A plant will be erected at a cost of about $30,000.

The California Tile and Terra Cotta Co., which was incorporated a couple of weeks ago at Los Angeles, Cal., is a reorganization of the Western Art Tile Company, which holds a valuable plant at Tropico, near Los Angeles. The new company, under the management of President L. Lindsey, will enlarge the plant and make a number of changes calling for an investment of about $300,000. An additional building with a frontage of 255 feet and a depth of 75 feet will be erected at once. Additional kilns will also be installed.

The Pacific Clay Manufacturing Company of Riverside, Cal., has been incorporated here with a capital stock of $250,000, of which $80,800 has been subscribed by E. G. Durant, L. S. Porter and C. B. Hewitt of Pasadena, W. A. Bingham, of Los Angeles, G. A. Baldwin of Kenosha, Wis., and W. H. Crosby, of Racine, Wis.

E. C. Allen of the Albuquerque Brick & Tile Company, which is to utilize the big figure deposits at Algodones, will leave at once for the East where he will purchase the brickmaking machinery to be installed in the new plant. The office will be in the Barnet Building.

The directors of the Corona Pressed Brick & Terra Cotta Company, met Jan. 15th, to increase the capital stock from $25,000 to $150,000.

One of the Anderson-Holt & Gregg's brick kilns was destroyed by a heavy storm last week and 75,000 brick were damaged.

The Spokane Pottery Company has succeeded to the business of the Standard Stoneware Company, at Clayton Wash. The Spokane Pottery Company already has a plant at Spokane, Wash.

The Central Brick Company, which has taken over the brick plant started near Point Richmond, by the Wilson-Lyon Construction Company, is making great improvements and will considerably increase the capacity. New pressed brick machinery will be installed because there is a mountain of clay that will make fine pressed brick as well as common. The product is handled by the Western Fuel Company.

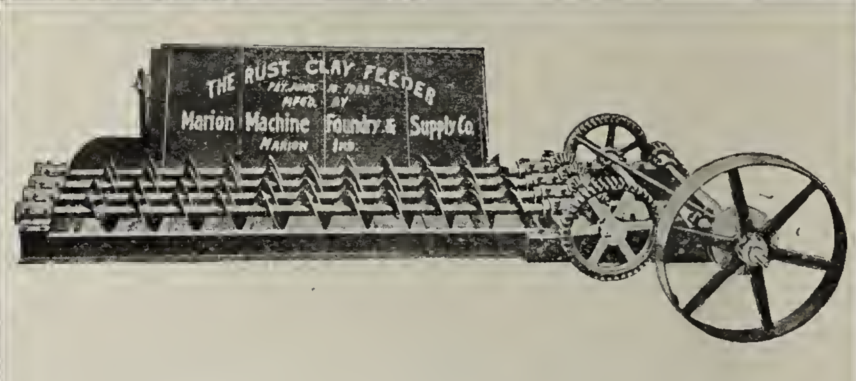
The Steiger Terra Cotta & Pottery Co., reports the terra cotta business a little quieter since the first of the year. with low prices which should result in the selection of this material for many of the new buildings now being planned by San Francisco architects. The company has just commenced the manufacture of a new line of architectural terra cotta including white glaze and bright and matte-glaze. The last is similar to that used in the construction of the Fairmont Hotel which was imported. Also some some glaze mantel tiles in a variety of very artistic designs have been placed on the market. The Pluto firebrick, pure white, which were brought out a short time ago are doing well.

The brick plant at Glen Ellen, Cal., is said to be running on a profitable basis, and all the brick turned out finds a ready market. The concern is owned by the California Brick & Pottery Company.

The Bay View Brick Company has just installed at its plant at Thirty-Second Avenue and G. Streets, Fate & Co's. brick machinery with a daily capacity of 100,000 common brick. Stiff mud is used, wire cut. The new equipment is giving satisfaction and will be operated throughout the year.

The usual carry-over of common brick is reported around San Francisco. The Sacramento Transportation Company had 12,000,000 brick on hand on Jan. 1st. The new season starts April 1st. There is the usual overproduction, but building prospects are very good, considering that steel frame buildings are very numerous, requiring a small proportion of brick. Prices of common brick are very low, although the price is nominally $10 with 5 per cent off, as established by the Standard Brick Manufacturers' Association. The principal demand is now for buff brick for the better class of buildings. Very little red pressed brick is being used. The new sixteen story "Chronicle" building and the fine Grant residence at the corner of Broadway and Webster Street are exceptions, red being used very effectively. A number of the stiff mud plants are in operation this winter, but the soft mud plants are not producing, merely burning the bricks that were molded last fall.

San Francisco, Cal., February 6, 1906. Sunset.

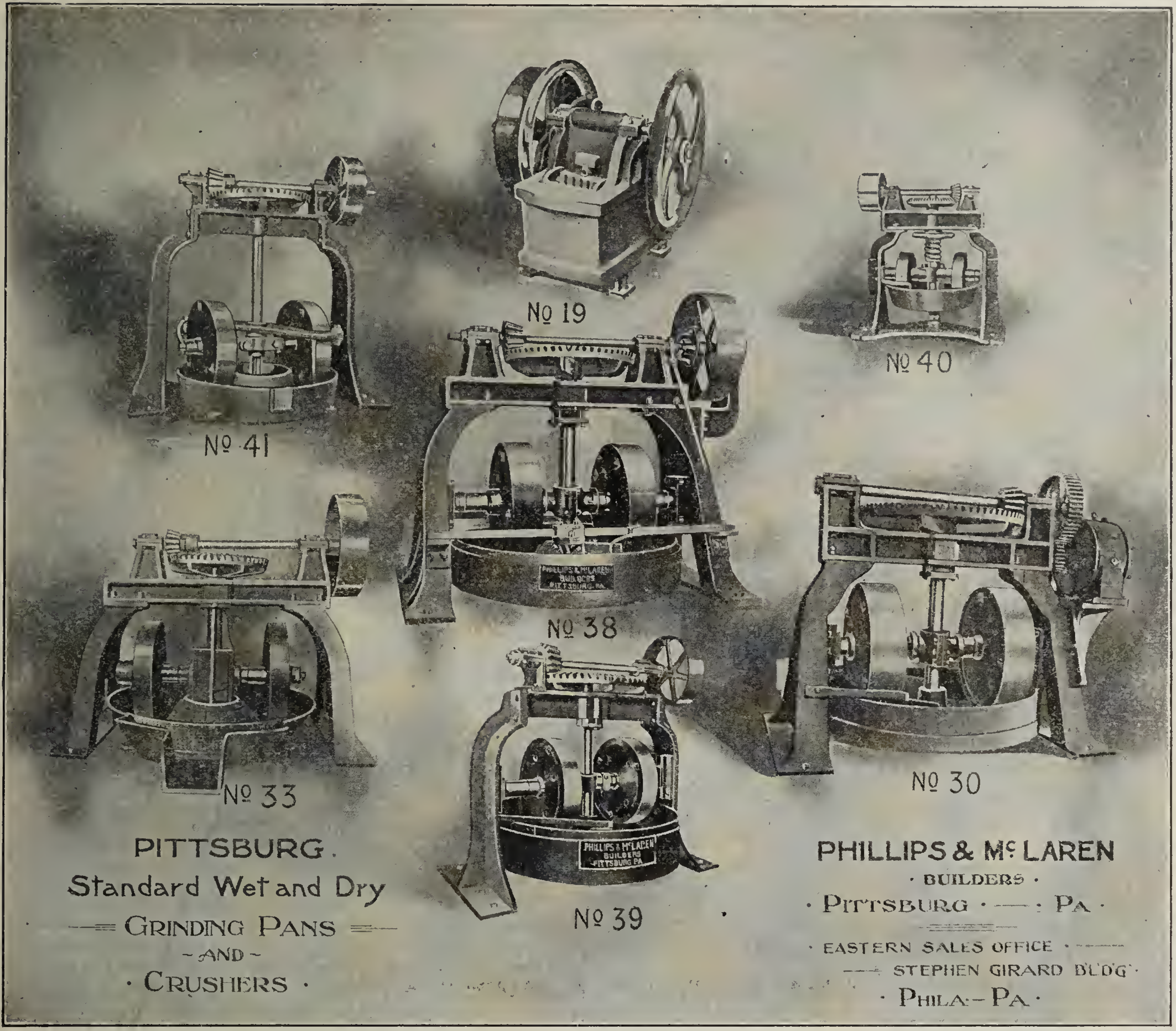


A NEW CLAY FEEDER AND MIXER.

The Rust Clay Feeder has been brought out in response to a better method for mixing and feeding clay in brick, tile and all clay working plants. By the use of this feeder the services of two men are entirely dispensed with, the clay being dumped into hopper of machine from car is automatically fed into the disintegrator. The spirals draw their supply evenly from all parts of the hopper, mixing the clay perfectly, which tends both to improve and increase the output of the plant.

Send for full descriptive circular.

Marion Machine, Foundry and Supply Co.
Marion, Ind.



These are only a few of the styles we make. There are several thousand of our pans in use, doing good service and giving satisfaction.

If in need of grinding, washing or mixing pans, or crushers, for any purpose, write us, stating kind of material and capacity required.

PHILLIPS & McLAREN,
PITTSBURG, PA.

See Ad on Page 387.

Written for the Clay-Worker.

WESTERN PENNSYLVANIA CLAY NEWS.

BUSINESS AND BUILDING conditions have shown considerable improvement in the past month, and considering the time of the year, the month of January has made a most credible showing. The weather so far this month has been bad for building operations, however, and the business has fallen off considerable, but the larger companies are busy filling advance orders for bricks that will be used in the early spring in the immense improvements that are planned in the local iron and steel mills in this immediate vicinity. These improvements as already announced will approximate many millions of dollars, and will be the basis of enough orders to keep the works filling them, busy for the entire summer. The majority of the plants manufacturing building materials are working their plants to the full capacity in order that they may be able to fill with dispatch the heavy requirements that the contractors will pour in upon them as soon as the weather will permit the building operations to be pushed as rapidly as possible. The indications are that the building brick business will be an exceptionally heavy one this year as there are an immense number of new structures contemplated for the entire district during the coming year, among them being no less than twelve sky scrapers.

The United States Steel Corporation has commenced the construction of the immense $7,000,000 plant that they will erect at Homestead, and will use an immense amount of fire brick in the lining of their new furnaces and stoves. The brick contract in this plant alone will amount to about $1,750,000, and it is almost a certainty that it will go to a local concern. There will also be an immense amount of raw clay required in these operations.

The American Refractories Company has been incorporated to manufacture and to deal in brick, fireproofing, clay products and cement. The incorporators are Daniel M. Kirk, B. J. Jarrett and E. P. Griffith, all of Pittsburg, and M. J. Cohan and W. W. McVeill, of Alleghney. The plant will be put in operation at once, and will be one of the most complete in the vicinity.

The Homestead Brick Works, which has been shut down for the past two months on account of lack of orders for building brick, resumed operations the first of this month, and will now be able to run for the entire summer. The company has been awarded the contract for about 3,000,000 brick for the Homestead Lumber Company, which has the contract for the new homes for the workmen of the U. S. Steel Co. at Munhall.

The brick plant of the McFeely Brick and Manufacturing Company at Latrobe was completely destroyed by fire the latter part of last month, causing a loss of about $125,000. The plant was owned by Pittsburg men, and was one of the most modern and complete in the Pittsburg District. The loss is covered by insurance.

The Carbon Brick Company, of Carbon, Pa., has purchased the plant and property of the Riverside Brick Company, at Bush Run, O. The latter concern failed some time ago, and the plant has been idle ever since. A new plant, which will cost $100,000 will be built at once. W. A. Byron is at the head of the new concern.

A meeting of the stockholders of the Brighton Fire Brick Company, of New Brighton, Pa., will be held on the 24th of this month to consider making a number of improvements at the plant.

The Mayer Pottery Company, of Beaver Falls, report that they are running to the full capacity of their works, with their books full.

F. H. Knox, secretary and treasurer of the Federal Clay Manufacturing Company, which is a subsidary concern of the National Fireproofing Company, committed suicide at a hotel in Jersey City on the eighth of this month. He was 40 years of age.

Corrigan, McKinnie & Co., will build a battery of blast furnaces and stoves at Black Lick during the coming summer. The Harbison-Walker Refractories Company will furnish the fire brick.

The Kier Fire Brick Company, 27 Stevenson Building, reports a very good business at the present time, with considerable work booked ahead, and an excellent outlook for the coming season. They will make a number of minor improvements at their plant, which will facilitate the drying and burning of the brick.

The Reese-Hammond Fire Brick Company, 1207 Park Building, with works at Bolivar and Garfield, Pa., have all plants running to full capacity, and look for a very prosperous summer business. They will make a number of improvements at both works, and contemplate building another kiln.

The Harbison-Walker Refractories Company has secured a number of large orders from the Carnegie Steel Company, for blast furnace and stove lining brick, and are running all of their plants to capacity. They are enjoying a good business in the building brick lines, and a number of times have been unable to keep up with their orders for this class of brick. Chrome and magnesite brick are in excellent demand, and the outlook for the future is said to be very bright.

From the present indications there will be an immense amount of coke oven construction in the Pittsburg District during the coming summer, there being no less than 20,000 ovens projected at the present time while there are in the neighborhood of 5,000 under course of construction now. As there is a large quantity of coke oven fire brick used in this work, the outlook from this source is undoubtedly excellent.

F. A. C.

The Growing South

No other section is forging ahead so fast as the Southeastern States, in agriculture, horticulture, factory building and general progress. The last year's record along the

SOUTHERN RAILWAY and MOBILE & OHIO RAILROAD

of investments in factories and improvements was over $119,000,000; for four years, $464,000,000.

Splendid Opportunities exist in Alabama, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Virginia; and in Southern Illinois and Southern Indiana, for investments of all kinds.

Factory Locations—Where all conditions are favorable for making and marketing iron and steel and their products, all kinds of wood-using articles and nearly every other line of industry.

Clay, Kaolin and Shale Deposits of the Highest Class, with best manufacturing conditions and splendid markets and transportation facilities, ought especially to appeal to parties looking for locations for POTTERIES of all kinds, FIRE, PRESSED, PAVING or COMMON BRICK PLANTS, TILE and PIPE WORKS and for any other clay using industry.

Publications and special information furnished. Our department is a Bureau of Free Information for all seeking locations or investments. Address nearest office.

M. V. Richards,
Land and Industrial Agent,
Washington, D. C.

M. A. HAYS, Agent,
225 Dearborn Street, Chicago, Ill.
CHAS. S. CHASE, Agent,
722 Chemical Bldg., St. Louis, Mo.

THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol XLV. INDIANAPOLIS, IND., MARCH, 1906. No. 3.

Written for THE CLAY-WORKER.

CLEVELAND'S SCHOOL FOR BRICKLAYERS.

An Important Enterprise That Will be a Great Help to the Brick Interests of That Section.

A DEPARTURE that promises much good for the building interests is a trade school recently established at Cleveland, Ohio, in which the ancient art of laying brick will be taught. It is a unique educational enterprise in which the readers of The Clay-Worker are much interested. For many months the building and sewer contractors in and about the Ohio metropolis have been hampered greatly by the lack of skilled bricklayers due to the restrictions placed upon apprenticeships by labor unions. The latter have restricted the number of apprentices in this trade until there are not enough bricklayers to meet the demands of builders. It is hoped that this school will lessen this difficulty by giving young men who desire to do so an opportunity to learn the bricklaying trade, which can be taught in a six months' course, it is thought. The Cleveland school is the first of the kind in the country and marks an era in this field of industrial education.

The "Primary Class" at the New Bricklayers' School, Cleveland, Ohio.

The school is working under the direction of the Mason Contracting Association and already has a couple of score of young men who attend for instruction. It is but an evolution which is slowly but surely creeping into all the trades. The theory is that a young man who applies six months to actual instruction can learn more than an average apprentice who works four years and during that time does heavy rough work.

The object is to give the apprentices a thorough knowledge of bricklaying. The school is operated at a loss to the management, but the contractors believe that in the end they will be the gainers. The course of study is to last six months and the students will receive instruction from capable, expert instructors. The classes are held during the day ordinarily, but a special arrangement has been made for a night class lasting two and a half hours for those who cannot attend during the day.

The regular class starts at 8 o'clock in the morning and continues eight full hours. All phases of the bricklaying trade are taught from the simplest to the most intricate. In addition to the handling and adjusting of the materials, the apprentices are given instruction in practical geometry so that they may do the more intricate work of masonry with some little practice. The students are all young men and enthusiastic in their work.

It is aimed to have the students acquire sufficient expertness in six months to place them alongside of experienced workmen. All students are guaranteed work by the association as soon as their course of instruction is finished. The association officers say they can use an almost unlimited number of bricklayers as there has been a lack of available workmen for the past two or three years. That was one of the reasons for starting the school.

The first exercise which is given the student after being taught the handling of rough brick, is that of "laying up a corner." This is the first real problem the student strikes and keeps him busy for some time mastering it. Many of the building contractors and their foremen assist in the instructing of the pupils. It is expected that by mid-summer a batch of forty or fifty new bricklayers will be ready to go to work. The movement has met with the opposition of the trades unions in Cleveland, but the contractors believe that after instructing young men in bricklaying the unions will not be able to win them over or intimidate them into joining the unions.

The Brick and Building Situation in Cleveland.

Business in the brick trade in Cleveland is quiet at present, owing to the swooping down of King Winter. The past season has been one of the most successful in many years, owing to the open fall. Building operations continued up to the New Year and for a week later, and as a result, many of the smaller jobs contracted for late in the fall were gotten under roof before the snow blocked the work.

The outlook for building operations next year are bright. The Cleveland Trust Co. is putting up an immense building at Euclid avenue and Erie street. The old Forest City House, located on the public square and Superior street, has been sold and a New York company will erect a skyscraper hotel in the spring. The Dime Savings Bank is also credited with the building fever, it being rumored that its present quarters are to be replaced by a sixteen-story building. Many large manufactories will shoot up when the spring opens up; many new stores and homes will be built, and miles of brick pavement will be laid.

The county commissioners have decided not to build a boulevard to Chargrin Falls, but to extend instead, the paving on Miles avenue for about four miles beyond the corporation limits of Newburg. The roadway will be fourteen feet wide, as usual, and will be of brick. The construction of this road is carrying out the plan of the county commissioners to extend the brick surface on all roads a few miles out of Cleveland. Bids on the road from Newburg to Randall will be received by the county commissioners during this month. It is promised that work will be commenced on the extension of the road as soon as the weather will permit.

Cleveland's city engineers held a conference recently with local paving contractors for the purpose of revising the paving specifications so that the city might secure lower bids for its work. A friendly discussion took place at which the specifications were taken up item by item. A good deal of cumbersome and indefinite language was stricken out so that there may be no disputes between the city and the contractors after contracts are let and started. The city officials and contractors also agreed that the use of slack cement will be prohibited in future. Nothing but Portland cement will be used henceforth. It was decided, also, to use asphalt filler within two feet of curbs on all brick streets, cement filler to be used outside that line. Cleveland has eighty streets to be paved this year, and bids for paving jobs will be advertised under the new specifications as soon as they can be prepared. BUCKEYE.

Written for The Clay-Worker.

IN WINTER QUARTERS.

FROM THE activity and rush of the brick yard in summer to the dullness and stagnation of winter is a great transition. In Northern latitudes there couldn't be anything more abandoned and as lifeless as the average brickyand and its surroundings during midwinter. It is impossible to do anything, with the possible exception of taking down brick from the kilns.

Along the Hackensack river in New Jersey there stretches a long line of brickyards, with their accompanying apparatus and buildings. With the opening of spring there is plenty to do to keep everyone busy, but in winter, particularly when the weather is cold, it is impossible to do anything. The clay pits are frozen hard. The yards themselves are covered with snow, and the river, upon which these yards depend for transportation facilities, is covered with ice.

An Ice Bound Brick Yard.

Last winter the ice was worse than usual, being more than a foot thick. The previous winter it was barely frozen over, and all through the year there was more or less movement, but last season the river closed in November and remained closed all winter; so far this year the river has been open to a remarkable extent.

There was a serious flood in November, of 1904, which filled all the clay pits with water, and some of the companies utilized the unusual opportunity of harvesting a crop of good ice from the top of the clay pits. This had scarcely ever occurred before. The ice was about a foot thick and of excellent quality.

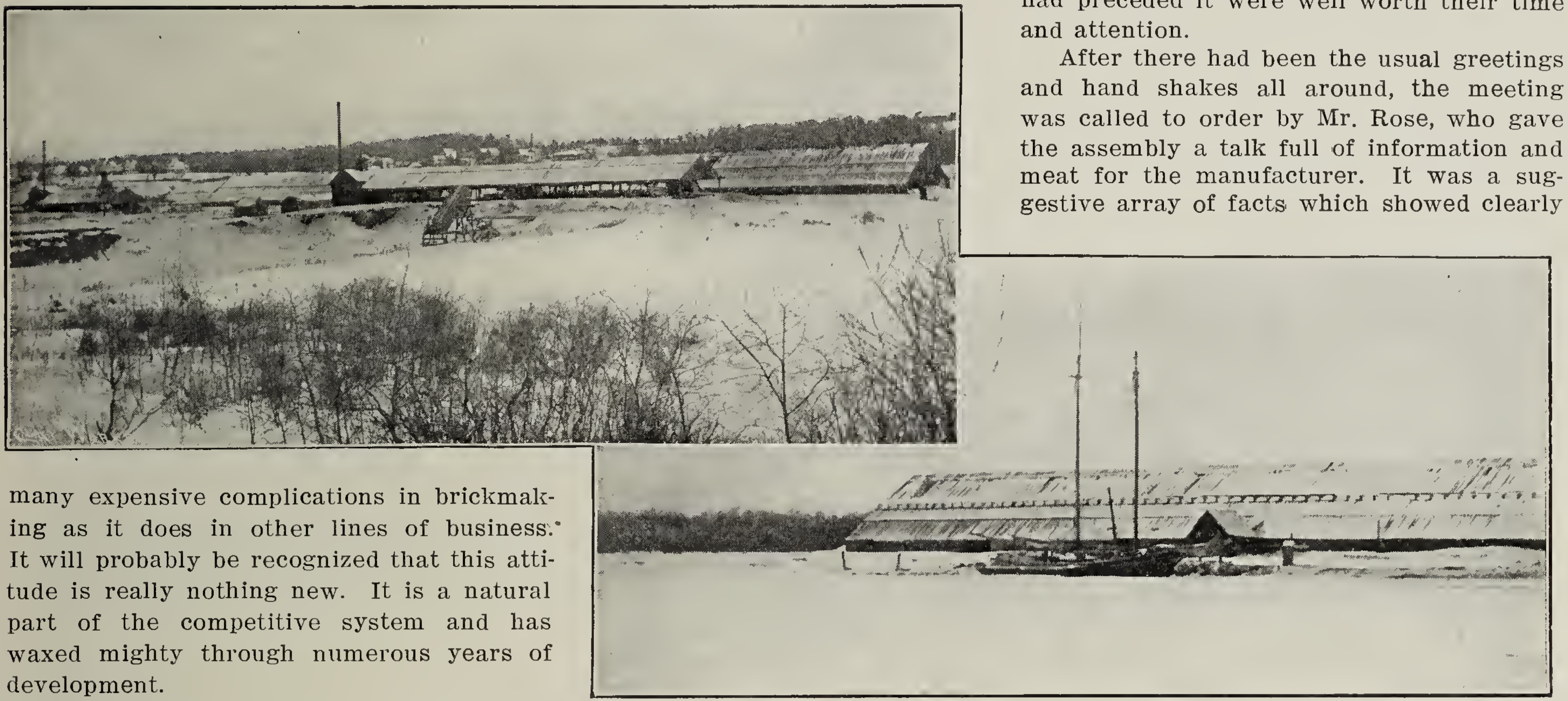
All the schooners were frozen in at the wharves. The rising tide kept them from freezing solid. The water spurted up between the side of the schooner and the ice and formed, in some instances, curious little piles of white ice alongside the boat. No damage was done to any of the boats, but if the water had risen suddenly and the ice broken without melting much, there might have been serious trouble before the schooners could be extricated from their vice-like resting place.

The accompanying illustrations show the Hackensack yards in the grip of winter. These photographs were made with the mercury below zero and when about a foot of snow covered everything. Those who are located in more favored climes will sympathize with their co-workers who are ice-locked, and wish them an active trade and good prices when winter finally releases its hold. BURTON.

Written for THE CLAY-WORKER.

NEW YORK BRICKMAKERS' ASSOCIATION.

BRICKMAKERS are not always ready to meet and shake hands on terms of good fellowship. Like all other trades there is more or less suspicion of the other fellow, provided the other fellow also makes brick. This attitude is quite as unfortunate and leads to quite as many expensive complications in brickmaking as it does in other lines of business. It will probably be recognized that this attitude is really nothing new. It is a natural part of the competitive system and has waxed mighty through numerous years of development.



Hackensack River Brick Yards in Winter Quarters.

Sometimes a man rises in a trade large enough to overcome such tendencies and put it upon a more reasonable basis toward each other. Frequently attempts made to benefit a trade in this way fail. Sometimes they are partially successful, but finally fail because the enthusiasm of the promoter of the movement fails. It requires a liberal supply of enthusiasm and a liberal amount of energy rightly directed to accomplish anything in bringing a trade together. Accordingly a trade may consider itself fortunate if such a man rises and keeps at his work until he accomplishes something worth while.

Brick manufacturers in the Hudson Valley are particularly fortunate in this respect. They have with them John B. Rose, president of the John B. Rose Company, of Roseton, who possesses all the qualities essential to bring about such benefits as may be derived from a touching of elbows and bringing together not only brick men, but contractors and builders who buy of them. When such an invitation as the one following is received by a brick man or one in any way interested in brick, he makes a note of the date, carefully refrains from making any engagement that will conflict and prepares for an afternoon of enjoyment. The invitations this year read:

THE LETTER OF INVITATION.

Dear Sirs: January 6th, 1906.

You are cordially invited to be present at the Third Annual Pow-Wow, better known as the Hot Air Convention, to be held on Thursday, January 18th, 1906, at the Murray Hill Lyceum, 160-164 East 34th Street, New York City, two short blocks from Subway Station.

A meeting of brickmakers will be held at 12 o'clock noon, at which a report of the quantity of brick on hand will be submitted and such other business as may properly come before such a meeting will be discussed.

Luncheon will be served at 1 o'clock, to which the general building material trade have been invited.

A vaudeville performance under the direction of a leading theatrical house will conclude the afternoon's entertainment.

Kindly give by return mail the names, on the enclosed postal, of those connected with your firm that will attend.

Yours truly,
JOHN B. ROSE COMPANY.

At noon the 18th there were something like one hundred brickmakers gathered in the meeting hall of the Murray Hill Lyceum. They came from sections near New York, and they remembered that the two meetings which had preceded it were well worth their time and attention.

After there had been the usual greetings and hand shakes all around, the meeting was called to order by Mr. Rose, who gave the assembly a talk full of information and meat for the manufacturer. It was a suggestive array of facts which showed clearly the results of the concerted work of the past few years, and confirmed the statements of prosperity which have been heard ever since the season closed in the East. The essential parts of this talk follow:

"I think I can point to you the most prosperous year in the past fifteen. When we met here last year at this time we were entirely contented with the results of our work and would have been satisfied if we could have been assured that the coming year would be as good as that. I scarcely need to tell you that the past year has been far better than 1904, and the best year in the past fifteen. It was a year of high prices throughout and from the time the first load of brick was delivered in the spring up to now, uniformly high prices have prevailed, and we have a perfect right to felicitate ourselves upon the result. It was all that could have been desired.

"Six years ago it was found that brick were going lower and lower each year until all possibility of profit was wiped out. We found that our production was one thousand millions, and that left too large a surplus. It kept us from receiving what we should have received for our brick. In other words, the demand was insufficient to take care of what was made. It was then that our associated arrangement was entered into and production was gradually reduced to seven hundred and fifty millions. That improved matters somewhat, but prices were still low. In 1901, increased building began in this vicinity and from about $50,000,000 worth of new buildings in Manhattan and the Bronx that year the new operations increased until last year they were $163,000,000. What they will be this year cannot be foretold.

"Production of brick has steadily increased until it was 1,250,000,000 last year, which was substantially 200,000,000 more than the year before. When we gathered here last year it was told you that after a careful canvass of the situation, about 214,000,000 brick were left in the yards. The same care has been exercised in making up the estimates this year and we find 200,000,000 in the yards ready for shipment, and the Hudson river open to navigation as far as Haverstraw. It is true, too, that something like 200,000,000 more brick have been made on the Hudson river alone than were made the previous year, yet the production has not kept pace with consumption, and manufacturers are now confronted with the pleasing situation which guarantees them a good price for their product.

"What makes the market? It is the demand, and just as long as the demand runs as heavy as it has done, just so long will prices hold up to the present level. It is true that builders complain and say that the price of brick is ruinous, but nevertheless they buy, and just as long as they buy, the market will be good. It is impossible to say how long the market will be good. We hope continuously.

"One thing we must try to overcome. Some of the builders and others declare that the brick trust is putting prices up so high that it will be impossible to buy brick much longer. We must, therefore, to protect ourselves, disseminate the information that there is no trust and that the price of brick is due wholly to the demand. That is the only thing that governs prices."

"I want to call your attention to one or two things. I don't believe there is a manufacturer here who is satisfied with his towing. The price doesn't trouble him as much as the loss of time. While the price for the service is all that could be asked, there is sometimes a loss of as much as $25.00 in time. We hope to correct this, and a company has been, or will be, formed which will buy a number of tugs for the express purpose of doing towing for brickmakers. If the number first purchased are insufficient, more will be added to the fleet. In this way we hope to overcome the difficulties which now beset us, without increasing expense.

"One thing more. The amount of money paid for the brick which are made near New York aggregated something like $12,000,000 during the past year. The amount of money paid by buyers of brick and other material used in construction work was about $18,000,000, making a total of $30,000,000 which have been paid out during the year. This money is all handled through different banking houses, and men outside the industry get their profits upon it. We hope to see a brickmakers' trust company formed, through which the money can be handled in the future, thus reserving to the industry something of the profits of handling this money. These two are thoughts merely, and I wish every man here would think them over and write me his conclusions, whether for or against. Our brains were given us to think with and we shall be successful in exact ratio as we use them for that purpose.

"Now thanking you for your attention, I want to say that we shall adjourn up stairs in just seven minutes, so whoever has anything to say must say it quickly.,,

Meanwhile a substantial lunch had been in preparation, and when the company reached the upper floor they found covers laid for five hundred people, and there wasn't a vacant chair. The menu which is reproduced herewith, was tempting, well cooked and excellently served.

Menu for John B. Rose Co., Thursday, Jan. 18th, 1906.

Blue Points
Consomme Printanier
Celery Salted Almonds Olives
Filet of Beef aux Champignons
French Green Peas Potato Croquettes
Lobster a la Newburg
Long Island Duckling au Cresson
Pomme Duchesse
Fruits French Tarts Candy
Ice Cream Fantasie
Rocquefort Cafe Noir

Mr. Rose and his assistants were untiring in their efforts to entertain the company. Mr. Rose was the very embodiment of an enthusiastic entertainer as he led the singing. A sheet was placed at every plate upon which were printed a number of the popular songs of the day, and these were sung with a will under the direction of Mr. Rose and the leadership of the excellent orchestra. The most popular with those present was a paraphrase of "Everybody Works but Father" and ran as follows:

Everybody works but father,
  And he sits around all day,
Feet in front of the fire,
  Smoking his pipe of clay,
Mother takes in washing,
  So does sister Ann,
Everybody works at our house
  But my old man.

Everybody generates hot air,
  Prices go higher and higher,
"Dealers" holler Murder,
  "Builders" holler Fire;
"Brickmakers" keep on shoveling,
  Demand sells the brick.
Everybody generates hot air,
  The "Owners" all get sick.

After the dinner was concluded there was a good vaudeville entertainment, and the large company broke up voting that the Hot Air Pow Wow" of 1906 was the most successful and beneficial of the trio. The souvenirs were a large pin mounted on an American flag, reading "1906—Hot Air—What's Hotter? John B. Rose Co.," and a leather covered note book suitable for the vest pocket.

WELL PLEASED WITH EQUIPMENT.

The Standard Wall Paper Company, of Sandy Hill, N. Y., who claim to be the largest makers of wall paper in the world, have within the last two or three years had occasion to install considerable apparatus manufactured by the American Blower Company, of Detroit. Their experience with same is stated in a letter recently addressed to that company as follows:

"Replying to yours of the 7th would say that we have two of your 100-inch fans in operation in our Sandy Hill plant, which are used for drying purposes, one of which is operated with a motor, and the other with one of your type A engines, and we are pleased to say that they are in all respects the most satisfactory equipment of the kind that we ever had anything to do with. The heater and the fan with the engine just received were put in complete operation in 36 hours after they were received; everything seemed to fit perfectly."

Written for The Clay-Worker.

A MODEL PRESSED BRICK PLANT.

A MODEL PLANT, unique in more than one detail, is that put into commission by the Chicago Hydraulic Pressed Brick Co., at the beginning of the season just closed. Located at Porter, Ind., it has risen, Phoenix-like, (with apologies for that thread-bare phrase) from the ashes of the company's first plant, which was destroyed by fire October, 1904.

A device for using the waste heat from the cooling kilns in a dryer into which the brick are run on rack cars directly from the presses and again directly to the kilns, a truss roof stock shed absolutely without center supports to interfere with handling, and a movable shelter shed under which the clay is dug out from the rich clay bank, are among the features which make the Hydraulic's plant at Porter, remarkable among other pressed brick plants in the country.

The Chicago Pressed Brick Company was incorporated February, 1890. It is controlled by the Hydraulic Pressed Brick Company of St. Louis, which, prior to 1890, had furnished practically ninety per cent. of the face brick of all colors used in Chicago. Operating at Porter, Ind., prior to 1890 were the Purington-Kimbell Brick Company, the Thomas Moulding Brick Company, and the Hinchcliff and Owen Brick Company.

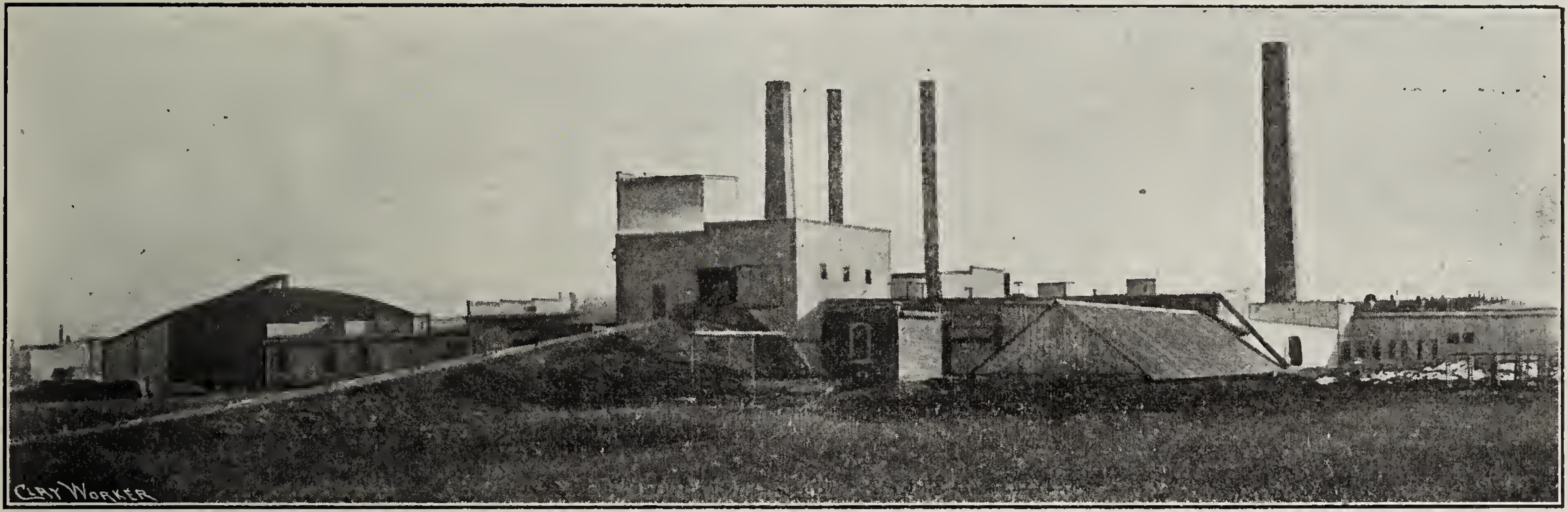
The Chicago Hydraulic Pressed Brick Company purchased the yards from the parties last named, and other acreage comprising a total area of 420 acres. This area contains the only deposits of clay burning a deep red, within 150 miles of Chicago. As Porter is only 45 miles from Chicago, and with an unlimited supply of clay, the object of the Chicago Hydraulic Pressed Brick Company in securing this property is self-evident.

The plant up to October 1904 had a capacity of 20,000,000 brick a year. Then came the fire, entirely destroying this valuable and productive plant, at the close of a season when it had been worked to its limit. The Company was not long in preparing to recoup this loss and rebuild the plant. Rebuilding operations commenced March 2, 1905, were completed the following May, and the plant is now the most modern pressed brick plant owned by any company, according to Chicago experts. No expense was spared in rebuilding, and every advantage given by recent patents in handling the product in an up-to-date manner, was eagerly seized by the alert management. E. C. Kimbell himself, had immediate oversight of almost every detail, and spent the greater part of his time down at Porter during the building of the new plant.

The output of the plant during its first year was practically 18,000,000. Being located on the Michigan Central, the Lake Shore and the Michigan Southern railways, with switch connections with the Pere Marquette and the Elgin, Joilet and Eastern, the shipping facilities are perfect. The plant is equipped to run winter and summer, and since rebuilding, has been run continually to its full capacity.

The officers of the company are: H. W. Eliot, president, St. Louis; F. G. Middlekauff, first vice-president, St. Louis; F. L. Joy, second vice-president and secretary, St. Louis; G. F. Baker, treasurer, St. Louis; and E. C. Kimbell, assistant secretary and general manager, Chicago.

At the Hydraulic's new plant it has been demonstrated for the first time that a pressed brick manufactured by the hydraulic process can be successfully passed through a dryer in which the waste heat from the cooling kilns is used, and this process in addition to turning out a superior product of brick, lessens the cost considerably, as the brick have only one handling from machine to kiln, ready to set. Reference to the cut will show the position of the rack car as bricks are being loaded onto the pallets direct from the machine. This will make it clear to any one interested in the manufacture of pressed brick wherein the advantage of handling brick in this manner lies.



Plant of the Chicago Hydraulic Press Brick Company, Porter, Ind.

A 50,000 per day Potts machine for the manufacture of sand molded brick, which are also handled through the dryer, is another feature of the plant, and the cut shows also the sand mold clay pit with the track where cars are drawn up the incline by cable direct to the disintegrating hopper.

One of the prize features of the plant, however, is the temporary shelter shed which has been installed. This follows along the clay bank as the clay is dug out, enabling the shovelers to work in any kind of weather. This shed is thirty-two feet square. The corner supports are six by eight timbers. The "bank side" of the shelter is seven feet high and runs along the top of the bank on a grooved wheel which rides a track set on a plank. The low side is sixteen feet high and also rides along on grooved wheels set at the two lower corners, these also running on a track bent to a plank. This shed keeps twelve feet of the clay bank under operation. Two tracks run through it and the cars carry the clay away as it is "mined." A volcano stove rests on a platform which is hung from a truss in the roof by rods. The men leave their dinner pails around this stove and have hot dinners, while on an ordinary winter day the temperature is so hot that the men work with their coats off. The shelter is equally good against the heat of summer, however. The shed is so strong that it has been found possible to explode a two-pound charge of dynamite under it without effecting it at all, and one man with a crowbar can "pinch," the whole structure along by working at the front wheel.

Another cut shows the main passageway into the kilns, and the track used to bring brick from the dryers direct to the kiln. Three transfer tracks run from the main kiln track, and each car on these tracks is a double transfer car. These double cars run on a four-foot guage. The pallet or rack cars are on a two-foot guage. These run out from the dryers to the double transfer cars, aboard the double transfer cars, down the movable tracks, running into the kilns. These movable tracks are also two-foot guage, and the cars are run off the transfer car direct to the kilns.

Sand Mold Clay Pit and Track Over Which Cars are Drawn up the Incline by Cable Direct to Hopper of Disintegrator.

The interior of the stock shed is also shown in a cut. It is 290 feet long and sixty-four feet wide. Its truss roof and absence of center posts make it absolutely unique. A loading track runs through the center of the shed. It is the first stock shed of its kind used for this purpose.

This model plant is in charge of W. J. Soper, the superintendent, who, with the exception of three years has been with the company since its organization.

THE BENTONITE DEPOSITS OF WYOMING.

THAT WE should find out West clay deposits, which are well known among laymen, and not known among the clayworkers, is rather an astonishing fact. In Bulletin No. 260, recently issued by the U. S. Geological Survey, we find a brief account of the bentonite deposits of Wyoming. The variety of clay known as bentonite, was first described in 1898 by the late Prof. W. C. Knight, of the Wyoming School of Mines. The first name given to this product was taylorite, in honor of Mr. W. Taylor, of Rock Creek, Wyo., who brought the clay to notice. It was discovered later by Mr. Knight that the name taylorite was preoccupied, consequently bentonite was proposed, after the Benton formation, in which the most extensive deposits of this peculiar variety of clay are found. Fresh bentonite usually has a yellowish, green color, but assumes a light cream tint on exposure. It is a fine textured, soft, massive variety of clay, which is unctuous to the touch and which, on the addition of water, forms an emulsion. The material is characterized by its unusual absorbent qualities, having the capacity of absorbing three times its weight of water. In a comparative test it is reported to have taken up twice as much glycerin as infusorial earth. When fresh from the quarry, it breaks with conchoidal fracture, but upon exposure loses this property and crumbles to a light yellowish powder resembling corn meal. It was formerly classed with fire clays, but owing to its fluxing properties is unfit for this purpose.

The following table gives several analyses of bentonite, made at the Wyoming State School of Mines:

ANALYSES OF BENTONITE OF WYOMING.

	Peach Creek	Cook County	Weston County	Natrona County
Silica	59.78	61.08	63.25	65.24
Alumina	15.10	17.12	17.62	15.88
Iron Oxide...............	2.40	3.17	3.70	3.12
Lime	.73	2.09	4.12	
Magnesia	4.14	1.82	3.70	5.34
Alkalies		.20		
Sulphur		.88		
Water	16.26			9.17

This clay has been used in various ways, chiefly in the manufacture of some of the higher grades of soap, the clay giving to the soap a certain weight and body, which is considered desirable. It has also been found valuable as a packing for a special kind of horseshoe and as a diluent for certain powerful drugs sold in powdered form. Small quantities are used as an adulterant in making candy, after the alkali associated with it has been removed. In this condition it closely resembles terra alba, which is generally used. Owing to its high absorption, its use in the manufacture of dynamite has been suggested. There are also other uses suggested, such as for loading paper and for the adulterations of various other kinds.

Main Passage Way Into Kiln, Showing Track Used to Bring Dry Brick From Dryer Direct to Kiln.

Bentonite occurs at various horizons in the Benton group. In one locality, near Newcastle, Wyo., this clay occurs in passage beds at the top of the Niobrara. In the Bighorn basin, bentonite is a gray fine-grained, massive clay, of green and yellow tints, apparently of good quality throughout. The deposits run from 5 to 10 feet in thickness.

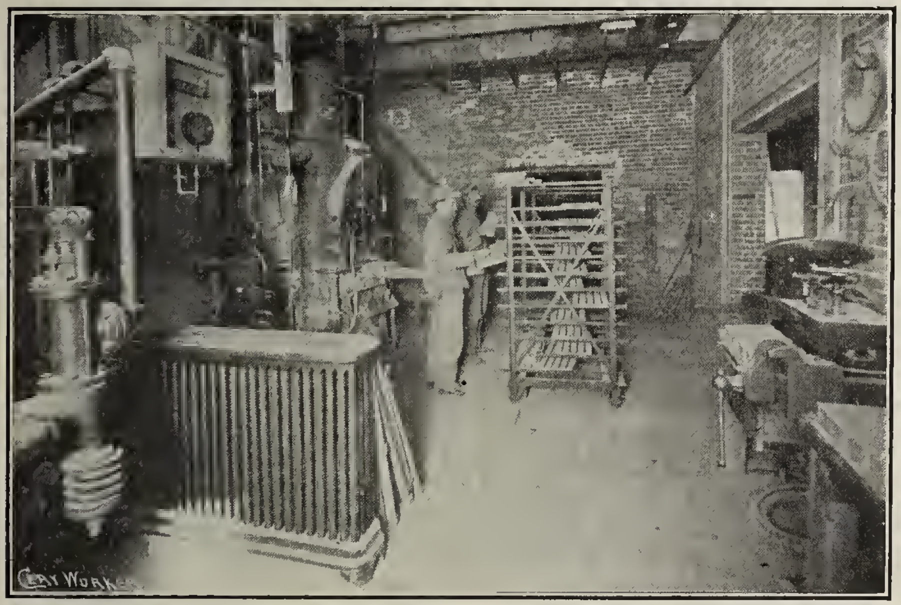
The mining of bentonite has been carried on in Wyoming since 1888, although the output has at no time been large. Prior to 1896 Mr. W. Taylor had shipped 5400 tons from his quarry near Rock Creek Station. This material was sold at $25 per ton, making a total value of $13,500. In 1897, Dr. Linscott opened a new bank of clay, apparently identical with the Taylor product, 6 miles south of Rock Creek, on the south slope of the Spring Creek anticline. The beds in this vicinity are said to extend for several miles. Later in the season Messrs. Edgar and Thole began operations on the deposits near Newcastle, Wyo. The production of the Linscott quarry for 1897 amounted to 150 tons, and that of Edgar and Thole to 20 tons. The extent of the clay in Weston County is considerable, the formation extending north and west from Newcastle, to Moorcroft. The railroad passes along this exposure, making it possible to operate banks at several stations between these points. The material at present has a market value of about $5 a ton. This industry is of but little importance at present, but it is believed that a thorough investigation of the clay with a view to ascertaining its utility might prove profitable.

Written for The Clay-Worker.

SOME THINGS I DON'T KNOW ABOUT BRICKMAKING.

Paper No. 1.

IT WOULD PERHAPS appear to a novice in brickmaking, that fifteen years acquaintance with one clay bank would be sufficient to master all the difficulties connected with that particular clay. That is a long time to give one's attention to one subject and then at the end to come out in print and state that there are still some unsolved problems. But men who pay particular attention to any one branch of science or industry become accustomed to proceeding with their work undisturbed by the many mysteries which confront them, making the best of the situation, producing as good practical results as possible under the circumstances, and gradually, as they get time in the busy rush of every-day work to give thought and experiment to solving the hard problems. Sometimes we learn to avoid the ill effects and losses that arise from these unknown causes, and are content to plod along in our commercial way and leave to other men the task of ferreting out the scientific mysteries that underlie these various troubles which we have simply mastered in a practical way, and about which we know no more, than just to avoid in a measure, their troublesome features. In fact, that is all the great majority of us have time to do, or are capable of doing even should we set our minds to the task.



Position of Rack Car as Brick are Being Loaded Onto the Pallets Direct from the Machine.

This article is a confession that the writer belongs to the practical and not to the scientific class of clayworkers, and yet he takes great interest in the work of such men as Professor Orton and others who are doing so much in their researches to assist us in mastering the subjects that have for so long given us trouble in our chosen field of labor.

There are two quite serious troubles in handling our clay that will illustrate the point we are aiming to make.

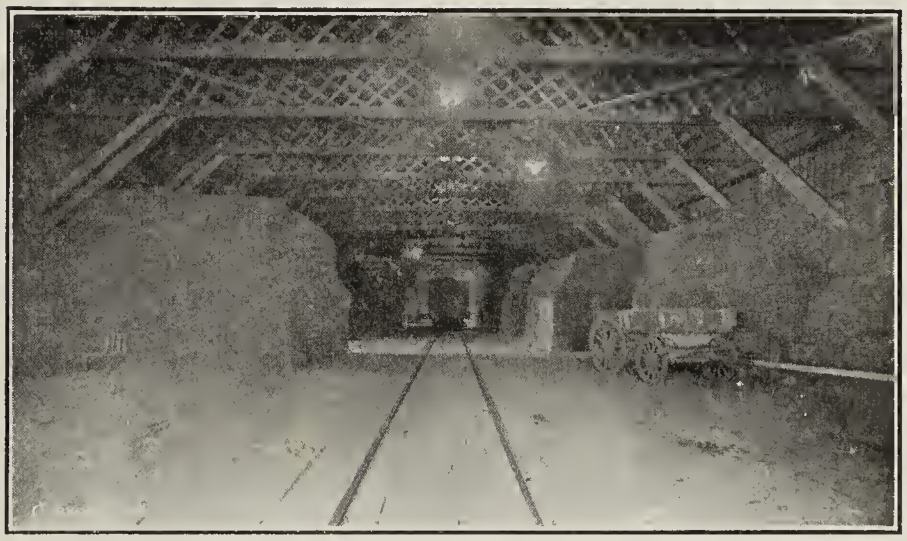
We refer to whitewashing or scumming, and to swelled centers in red brick. These troubles have so often been discussed in both practical and scientific articles that some may think these articles of no practical use. But we had such a stubborn case to deal with, and have spent so many years in trying to reach the difficulty, that we think a statement of our experiences and experiments along these two lines may interest and perhaps benefit some few of your readers.

While we have tested many clays from several States, in small quantities, we do not claim much practical knowledge of clays outside of our own plant. What we write here will be simply of the behavior of our own clay in our own down-draft kilns.

Our clay bank is in the valley of a small river, and consists of a very stubborn black clay—sometimes called "gumbo"—which we mix with a very weak sandy clay lying near it, to reduce the placticity of the fat clay, and also to prevent shrinkage in drying and burning. Most of our clay comes direct from the bank to the crusher, thence to an augur mill, thence to automatic side cutting table and then to the steam dryer. This dryer dries the brick in about 60 hours, and they come from the dryer perfectly free from scum. Part of our bricks are placed on racks to dry by natural air, in large sheds. They dry here in from 6 to 30 days and show no sign of whitewash even when they are placed in the center of the shed and are dried very slowly. Some writers in The Clay-Worker have claimed that when they dried their bricks too slowly they could see the scum on them as they came from the dry sheds. But our trouble is not in either method of drying, so it must originate, or perhaps I should say develop, in the kiln.

For many years we burned with wood, and while using this fuel we seldom were troubled with the white scum. Sometimes when we got the fires too hot before the water-smoke was entirely removed, we were troubled with the whitewash on the bricks that were below the center of the kiln. We remedied this by longer term water-smoking, and by getting the kiln pretty well heated up before closing the furnace doors, thus giving free draft and abundance of air while the heat reached the lower courses of bricks sufficiently to drive the water from them. If we closed the furnace doors too soon, even when using wood, the white scum would show upon the lower courses of bricks.

But it was when we were forced to commence the use of coal that our troubles began in earnest. Then our bricks were so unsightly that we could not get enough good reds to supply our demand for front bricks, though that was a very small demand compared to the number of bricks produced. We remedied that for awhile by water-smoking with wood and completing the burn with coal. But soon wood became too scarce for even that, and again we were forced to face our old trouble.



Interior of Truss-Roof Stock Shed Chicago Hydraulic Pressed Brick Co.'s Plant

We put in a steam dryer about this time and found that it to a certain extent remedied the trouble by drying the bricks so thoroughly before they were set in the kiln. But if we got in too great a hurry to get a kiln filled, and set bricks somewhat damp, we had the same unsightly burns.

The first coal we used for water-smoking was a cheap, dirty coal that caused a great deal of smoke and consequently a great deal of soot collected on the drying bricks, thus hindering the draft and increasing our troubles many times over.

This suggested two probable remedies—1st, clean fires, by using the best lump coal for water-smoking, and 2nd, increased draft during the early firing period. Another thing that suggested the second idea was the fact that drain tile seldom showed any signs of scum, and of course we jumped to the conclusion that a more open draft would do the same for brick. So we set our bricks more openly in the parts of the kiln most affected, then water-smoked with the best lump coal obtainable and found that the greater part of our trouble had disappeared.

At one time during these various experiments we decided to try weathering our clay, thinking that perhaps the action of the air upon the clay would remedy the mischief. So we built a storage shed, and hauled up a supply of clay and let it lie exposed to the air for several weeks, but we found that that made matters much worse; the weathered clay would scum badly in spite of the most careful handling. This we cannot account for in a scientific way, but the fact was very apparent, so we discontinued storing clay excepting enough to supply the mill during stormy weather.

L. C. M.

(To be concluded in next number.)

NEW SEWER PIPE PLANT IN TEXAS.

AFTER several months of preliminary work, locating deposits of clay and experimenting to ascertain its properties, all of which has now been determined satisfactorily, it has been decided by the principal stockholders of the Blackmer & Post Pipe Company, of St. Louis, to organize the "Post Pipe Company," under the laws of the State of Texas, with a capital of $125,000, fully paid, and to build, equip and operate a sewer pipe manufacturing plant, at Texarkana. The raw material, which an extended series of experiments has demonstrated to be of superior quality and especially adapted to the manufacture of vitrified clay products, particularly sewer pipe, will be taken from the company's own property about four miles from Texarkana, adjacent to the Iron Mountain Railroad. The factory will be located on seven and one-half acres of ground in the western part of the city, and will be directly connected by switches with the Texas and Pacific, Iron Mountain, Kansas City Southern, and the Cotton Belt Railroads, thus giving unusual facilities for distribution of the product of the plant.

The improvements to be erected will be a main factory building of brick, 80 by 252 feet, three stories, with brick annex, 40 by 100 feet, for engine, boilers and heavy clay-grinding machinery, and eight 32-foot down-draft kilns of the most approved construction. The arrangement and equipment of the plant will evidence the latest improvements in clayworking lines. The fuel to be used will be oil, which, at Texarkana, combines simplicity of operation, certainty of good results, and minimum cost. About $110,000 will be expended in the purchase of ground, and in the construction and equipment of the plant.

The officers of the "Post Pipe Company" will be, L. W. Post, president; L. R. Blackmer, vise-president; J. T. Wallace, second vice-president; G. R. Payne, secretary and treasurer; and M. P. Post, superintendent. While this company will be owned and controlled by the principal owners and officers of the St. Louis Company, its operation and management will be entirely independent.

It is the intention of Mr. L. W. Post to take up his residence in Texarkana, and to give his personal attention to the construction and equipment of the plant, and to the operation of the company's business.

Brick Machinery in a Modern Plant.—In a very interesting article Mr. Paschke describes the machinery as it is in use today in first-class plants. He starts with the mouth piece of the brickmachine, and gives description of about 90 different styles of mouth pieces. Auger machines and roofing tile presses are next described, and the different styles which are manufactured. The article shows good understanding of the manufacturing line. It is not at all necessary to have all mouth pieces of iron, and in many factories in Germany wood mouth pieces are in use.—Ton-ind Z. No. 2, 1906.

ROOFING TILE GLAZE.—A good roofing tile glaze which burns to a bright glaze at cone 09 is white lead, 55 parts, feldspar, 5 parts, sand 25 parts and ball clay 12 parts. The materials are ground fine, and used either on green or burnt tile. It is preferable, however, for good results to apply the glaze on burnt roofing tile. With 5 to 10 per cent. of oxide of tin this glaze will be white opaque. With 3-5 per cent. of black oxide of cobalt a blue glaze is produced, while with 2-4 per cent. of oxide of antim only a yellow glaze can be made. With 2 per cent. of oxide of copper a green glaze and with 2 per cent. of oxide of manganese and 2 per cent. of red oxide of iron a good brown glaze is obtained.—Keram. Rundschau. No. 1. 1906.

Chinese Ox-blood Glaze for Pottery.—The Chinese produce a very good red glaze which is usually called "ox-blood" red. The glaze has a little blue shade, and is very bright. According to latest analysis the composition of this glaze is:

Silica	59.58 per cent.
Oxide of tin	0.32 per cent
Oxide of copper	1.20 per cent.
Oxide of lead	8.20 per cent.
Oxide of iron	1.39 per cent.
Alumina	8.38 per cent.
Lime	11.11 per cent.
Magnesia	1.70 per cent.
Potash	2.74 per cent.
Soda	5.27 per cent.
Oxide of manganese	trace
	99.89 per cent.

It is apparent that in this complicated analysis the oxide of manganese did come from the oxide of iron. The lead in this glaze gives the brilliancy, and the combination with the silica gives a very stable glaze. The percentage composition of such a glaze would be:

Sand	75.0 parts.
Oxide of tin	1.0 parts.
Carbonate of copper	5.4 parts.
Carbonate of lead	29.0 parts.
Carbonate of lime	57.0 parts.
Bicarbonate potash	17.0 parts.
Bicarbonate soda	34.0 parts.
Red oxide of iron	4.0 parts.
Oxide of alumium	24.0 parts.
Magnesia	5.0 parts.

—Deut. Topf. & Z. Z. No. 6. 1906.

Freezing Test with Bricks.—The importance and the accuracy of freezing tests have not been brought out to a great extent. A German brickmaker, whose bricks were used for harbor works, had his bricks tested. Ten bricks were tested and found that the compression test of the bricks before freezing was 416.9 kilos per square centimeter, while after freezing, these bricks only stood 408.2 kilos. The building commissioner had also tests made, and it was found that while the tests did run higher the difference between the frozen and unfrozen brick was greater. In order to settle the matter definitely the manufacturer and the commissioner made several tests together. In none of the tests they obtained the same results. The tests show conclusively that the freezing test does not give us a correct data, and that many improvements could be made in conducting such tests.—Tonind Z. No. 10. 1906.

The Uses of Oxide of Tin.—The oxide of tin which is used to a great extent in potteries and terra cotta works in glazes and slips has found lately great application in galvanized iron ware. The iron people use yearly 30,000 tons of a total production of 83,000 tons. The production of China is not counted into this figure on account of the unreliable returns, but its production is estimated to be 20,000 tons. Of this production, England produces 4.759 tons; Straits, 52.620 tons; Banca, 15.250 tons; Biliton, 3.960 tons; Australia, 3.250 tons; Bolivia, 8.650.

The principal consumers are:

United States with 39.317 tons; Germany, 14.489 tons; Great Britain, 11.752 tons; France, 8,658 tons; Austria, 3.473 tons.

The price of tin has been raised steadily from 1896 from $295 to $600 per ton in 1902. The highest price for tin was in 1904, being $664 per ton.—Le Mois Scientific, Dec., 1905.

AN ENFORCED ENLARGEMENT.

THE INEVITABLE, unvarying result of making any supremely excellent article of universal demand and of making its virtues well and widely known to the inhabitants of such a country as ours is a constantly increasing demand for that commodity, no matter what it be. The sun shines on no other land wherein the habits and traditions of the past are so quickly discarded in favor of advanced methods and improved appliances, as in this favored land of ours with its eager and persistent searchers after, and prompt adopters of "something better." No better illustration of these "conditions," for such they most certainly are, can be found than in the recent enforced expansion of the already large and well equipped manufacturing facilities of the Main Belting Company, at Philadelphia. During the past year this ever enterprising company has built, on the very latest and most approved lines, an addition to their plant which will very greatly increase its output and enable it to at least measurably keep pace with a demand for its Leviathan belting, which is ever increasing as its altogether unique wear resisting powers become more widely known. The Leviathan Belt has long since won for itself many, and is ever winning new openings for the display of its consummate driving capabilities, and in manifold and various duties as a conveying and elevating medium, is demonstrating its astonishing "fetch and carry" capabilities. To its utter insensibility to conditions that positively prohibit the employment of leather belts and that speedily wreck the best rubber belts so far produced, may be credited the already great and ever growing popularity of Leviathan belting with the class of belting users who insist upon "results first, last and all the time." Leviathan belting, made only by this company, is successfully run exposed to heat, cold, wet, grease or grime, flying sparks, etc., etc., and in its make-up combines the tensile strength of steel with the lithe pliancy of a serpent—a combination that imparts to it such a powerful grip on the pully that the full quota of power is frequently secured with a belt running with a slackness (and consequent economy) that no other type of belt can approach. Prepared expressly for the purely practical man with small inclination for, and less time to waste on inflated treatises, the Main Belting Co. issues a small booklet which treats of the make-up and capabilities of their output, which booklet they inform us they will be pleased to send by mail to any of our readers who desire to investigate the claims of this remarkable power transmitter.

Written for The Clay-Worker.

A GUATEMALA BRICK PLANT.

Present Method of Manufacturing—Information Wanted for an Improved Plant.

I would like to improve my brick plant, and will very much appreciate any advice or information you or the readers may give me.

My clay is clean, without stones, easly soaked and when extracted it always carries some proportion of sand. Any fine work can be done with it, as I have used it for making pots, but for this use I had naturally to look for the best sort of it.

The clay is conveyed in rocker cars to the pits, where it is soaked. From the pits it goes by means of elevators into a crusher, where the hard lumps are crushed. Then another elevator takes the clay to a vertical pug mill and from there it falls in the machine, which is French made, of what you call stiff mud system, where the clay goes out of a die and is cut by a wire. It works thus: when the paste of clay comes out of the pug mill it is taken by two cylinders that force it into an iron box, where two spirals push it through the die. It is then cut by the wire. This should be a stiff clay system, but on account of lack of power (I have only 12 to 13 H. P.) or what is more likely I think, because the machine and pug mill are badly constructed, the clay must be abundantly soaked in the pits. I obtain, naturally, very soft bricks, that need a great deal of time to dry, and that are spoiled by the workmen when they take them from the machine. Besides, I cannot place these soft bricks, one upon the other, to dry, for they must be placed in small wood cases of which I need a great number, and they are constantly broken and out of use. I need the following nine men to make 8 to 10 thousand brick in ten hours:

2 to throw the clay from pit into elevators.

1 to receive them and place them into the small cases.

2 to receive them and place them into the small cases.

1 to carry and put the cases by the cars.

2 to push these cars where the cases are put the one upon the other, by these two men.

1 to take care of elevators, distribute the quantity of clay they carry, etc.

This is a long, troublesome and expensive process. What I need, is a strong and good machine of 10,000 brick capacity, that I may run with my 12 h. p. capable of working with clay sufficiently stiff, so that the bricks may dry more quickly, and may be piled one upon the other, without using those troublesome little cases, (pallets) or similar device. I want to obtain compact and smooth brick, with sharp edges that remain square when burned, and that may be handled without being spoiled when the machine delivers them. It must also be taken into consideration that our labor is very unskilled and I need, therefore, a strong machine.

Although I want a reliable and lasting machine, I must see also that it does not become too expensive, as my brick plant is a small one, although the largest here. I think that one of your soft mud machines would do the work I want pretty well, but as I have not seen them at work, I do not know if the brick are hard enough when they come out of the mold.

I hope that with the above information you will be able to give me good advice, for which I thank you most sincerely.

By this mail I ask Messrs. Rosenthal & Sons, of New York, to send you $2.65, price of one years' subscription to The Clay-Worker, that you will please send to my address.

Guatemala. G. RODRIGUEZ.

Written for The Clay-Worker.

THE CHICAGO BRICK AND BUILDING SITUATION.

THE FIRST two months of the new year have increased the faith of builders in this section that 1906 is going to be a banner year for building enterprises. They were all fairly well satisfied with 1905, but are confident now that 1906 will be even better.

During the past year there was general activity in the erection of high and costly office buildings, and the down town streets were not free from the obstructions attending this kind of work for even a single week. There is every indication that this condition will be continued. The value of the Illinois Tunnel in hauling away debris underground, has been incalculable in relieving congestion of the streets, which without it would have been inevitable. There has also been phenomenal increase in the construction of apartment buildings. Chicagoans will soon have title without dispute to the appellation of "cliff-dwellers." The district in which the greatest activity in this line was displayed, was around the Wilson avenue terminal of the Northwestern elevated railroad. Building of this type in all parts of the city was noted, however, and owing to the exceedingly open character of the winter, continues in progress.

During last year, it is estimated that about 40,000,000 face brick were sold in Chicago alone, not to mention the great quantities that were sold outside through Chicago dealers.

Chicago manufacturers of common brick had a fairly good year. They made 688,000,000 during the year, and their sales to country points ran a trifle over 148,000,000, while the city consumption was 549,000,000. Local consumption represented an increase of about twenty-three per cent.

The Celadon and Ludowici roofing tile companies have combined and the new concern is now operating as the Ludowici-Celadon Company, running four plants. The combination is expected to cut an important figure in the roofing tile business of this section of the country, as it offers opportunity of presenting to customers from the same source, a choice of expensive or cheaper material.

The Bonner & Marshall Company are having a run in Oriental finish brick. The New Southern Hotel at 12th St. and Michigan Ave. is using about 150,000, and an apartment building, at 56th St. and Madison Ave., using about 50,000.

Thomas C. and Joseph W. Moulding are reported temporarily on the sick list.

Terra Cotta Brick.

The American Terra Cotta Company, at the suggestion of Jarvis Hunt, one of Chicago's leading architects, has produced something entirely new in the line of structural material. It is a terra cotta brick. It is the only terra cotta brick, so far as known that has ever been made, a hand-made article. Seventy thousand of the new brick are being furnished for the fourteen-story building being erected by the Fuller Construction Company for the American Trust and Savings Bank at the northeast corner of Clark and Monroe streets.

The upper ten stories are to use this new product as front brick. The first three stories are finished in Bedford stone, the fourth in terra cotta straight. The ultimate effect aimed at is that of a gray granite. The terra cotta brick are a whitish gray splashed with dull reds and browns.

Jarvis Hunt, who is considered by the trade, a past-master in the art of producing unique and artistic effect with front brick, decided that in a sky-scraper, brick do not show up well in the upper stories because of their small size. Accordingly, Mr. Hunt set about to see what could be done in the matter of securing a larger brick. He wanted a rough finish, highly glazed product that would be absolutely impervious to dirt and water. He consulted Messrs. Gates and Prosser, of the American Terra Cotta Co., and they agreed to do a little experimenting. Mr. Hunt was so well pleased with the success of the result that he built up a wall of the first brick made and placed the order.

Forty-eight different sizes of brick, from normal size to brick seventeen inches long, are used in each story. The sizes vary with the size of the piers. The brick presents a rough surface; it is really a sand finish surface highly glazed. The rough surface will catch some dirt, but the first rain will make the walls clean as new because of the high finish.

The innovation is regarded with a good deal of quiet pride by the men who are responsible for it. It is apparently a new discovery, and is generally regarded as a success. The appearance of the few stories that thus far show the new product has called forth much favorable comment.

One of the largest projects now being talked of in the local market is that of the Congress Hotel Company, contemplating the erection of an enormous addition to the already great Auditorium Annex, at Congress street and Michigan avenue boulevard. It is proposed to build this addition in Michigan avenue to the south of the present Annex building and immediately adjoining it. The investment it is estimated will reach $2,000,000.

One of the notable apartment structures under way, is the exclusive society affair being erected in the Lake Shore drive at Cedar street. Marshall and Fox are the architects. S. S. Kimbell and Company are furnishing the front brick, a 150,000 job, the Continental paving brick being used. It is planned that the building shall be of artistic finish. It will rise to a height of eight stories, each floor containing only one apartment.

Many local dealers have announced that they would discontinue the practice of shipping small consignments of brick out of the city by ordinary freight at the request of customers.

"The practice is exceedingly dissatisfactory," said Mr. Charles Bonner, of the firm of Bonner & Marshall, who are discontinuing the custom. It is out of the question to get a car for a matter of 500 brick. If the regular freight handlers handle them as they do when the brick are shipped as ordinary freight, the material reaches the customer in such condition that he cannot use it. Hereafter we shall be obliged to refuse small out of town orders unless the customer will consent to having the consignment packed in barrels at an extra cost."

"Business is good, but the railroads cannot take care of the business," said one dealer. "If the railroad facilities of Chicago are not greatly increased within the next few years the city will begin to become decadent. It will starve for lack of nourishment. All this year we have great trouble getting cars enough to keep our material coming to us. Even when we were not ahead of the supply at the factory we had difficulties because of the roads. Now of course it is even worse. Coal is being brought in in great quantities. It is hurried into the city ahead of everything else and in the city limits it is the call on the team tracks. Building material is not in it, although the exceedingly open weather thus far has put material at a premium."

As a matter of fact, all material is high just now, because of a scarcity. Structural labor has been at a premium here all the greater part of the year, although the coming of the "dull season" of course, has made it much easier to get, and therefore put down the price.

Prices for common brick ruled about $7.50 the latter part of December, 1905, and have not changed much. Eight dollars has been asked since then, but not actually paid, the price now fluctuating from $7.00 to $7.50, according to dealers.

Mr. Sylvester Marshall, of Bonner and Marshall, has demonstrated that the brick business is only a stepping stone to the stage. Next season he expects to come out as a full-blown matinee idol—if Mrs. Marshall dosen't stop him. One night recently he starred as Reuben Hardacre in the "Old Oaken Bucket," a rural drama in four acts by Mary Moncure Parker. He was supported by an ambitious company, the men being for the most part among those best known in business circles of Chicago. The play was given by members of the Colonial Club in the clubhouse at 4445

Grand boulevard, and was pronounced a great success. It's a shame to quote Mr. Bonner, but honestly, this is what he said of his staid business partner:

"When I heard that Henry Irving was dead, my heart sank within me. While the world mourned the loss of a great actor, I mourned because it was threatened with the gain of one even greater, and I with the loss of my partner. I thought he was a good actor, but as the date of the alleged amateur performance at his club drew near, I changed my mind. He became a bad actor of the most pronounced type. He would stand and throw long, hard, melodramatic sentences at the exhibition panels until the surface of the impervious brick was scratched and battered.

'Bless you my children,' he would insist on saying when he was closing a bargain.

" 'The child's in Lunnon,' he would announce gravely on entering the office in the morning.

"I understand he has ordered a long, fur collared, cuffed and lined ulster. I hope 'tis false, but I fear the worst. You see I've even got the habit myself."

The above was quoted without Mr. Bonner's consent and probably without the knowledge that he had said it. Anyway it was a great play. SCRIP.

Written for THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NOTES.

THE BUILDING business, for the month of February as shown by the permits issued, indicates an increase of about 25 per cent. over that of the corresponding month of last year. This is not up to the proportions that the business should have attained in the last month as indicated by the conditions now, in comparison with those of last year, but may be accounted for by the fact that the weather was bad during the whole month and the business is being retarded by the strike of the bricklayers.

During February the estimated cost of buildings for which permits were issued by the building commissioner was $1,636,263, $361,141 over the figures for the same month in 1905. The number of permits issued during the last month was 535, compared to 353 a year ago. The report for the month is as follows:

BRICK BUILDINGS.

New Brick.	1905.	1906.
Permits	126	156
Estimated Cost	$1,109,039	$1,430,167
Additions, repairs and alterations to brick buildings.		
Permits	81	93
Estimated cost	$ 137,286	$ 138,665

FRAME BUILDINGS.

New Frame.		
Permits	125	231
Estimated Cost	$ 23,442	$ 61,673
Additions, repairs and alterations to frame buildings.		
Permits	21	49
Estimated Cost	$ 5,355	$ 5,758
Additions, repairs and alterations to brick and frame bldgs.		
Estimated Cost	$ 142,641	$ 144,423
Totals	$1,275,122	$1,636,263

The increase in building permits corroborates the old story that St. Louis is a thriving and growing city. Office buildings, appartments, flats and other houses are needed to accommodate the rapidly increasing population.

Architects are busy drawing plans and designs and the contractors are making estimates on numerous buildings, which will add materially to the growth of St. Louis.

The proposed buildings are not confined to any one particular section of the city, but are to be erected in nearly all sections.

All labor in the building trades with the exception of a little brick work, was suspended the latter part of February at the instance of the East St. Louis contractors, as a result of the failure of the Builders' Exchange to arrive at an agreement with the district council of the Building Trades Council.

Dissensions extending over several years resulted in the trouble, and the contractors ordered a general lockout. The trouble originated with the hod carriers. Several years ago, the brick-layers withdrew from the Building Trades Council. They formed an independent organization. The hod carriers took the same course and became affiliated with the international union.

About eight months ago, some of the hod carriers withdrew from the international union and formed another union, affiliating with the Building Trades Council. Dissensions resulted and the master bricklayers refused to employ any of the Building Trades Council hod carriers. The carpenters then refused to work on the buildings on which international union hod carriers had worked and a strike of six weeks duration resulted last fall. By agreement the carpenters returned to work.

The carpenters asked for an increase of from 47½ cents to 55 cents an hour and a half holiday Saturdays. The contractors said they would meet the request provided the carpenters would agree not to go out on a sympathetic strike within one year and that they would agree to work on buildings on which the international union hod carriers were employed. These conditions were refused and the contractors, to avert a strike, ordered a suspension of all building until the differences could be settled.

This was done March 7th at a meeting of the Master Builders Association and the Builders Exchange and the carpenters returned to work March 8th with increased pay under the working arrangement existing prior to the lockout.

The Laclede Fire Brick Mfg. Co., are making many extensive improvements in their plant. They have under construction five dry kilns, and at the present time they are installing a brick machine with a capacity of 20,000 brick daily, and a sewer pipe machine will add materially to their equipment. Three of the kilns will have a diameter of 40 feet and a capacity of 120,000 each. The two other kilns have a diameter of 28 feet and an individual capacity of 70,000. These few changes will give them an increased output of fully 25 or 30 per cent. The company made 30,000,000 fire brick last year, besides such articles of manufacture as wall coping, chimney coping, hollow tile fireproofing, retort settings, etc., so that one can easily see what an increase of 25 per cent means.

The brick manufacturers say that business is lively with them since the cold snap of several weeks duration that took place during February. Some, however, say that they will have to shut down for lack of clay, unless conditions become such that they can get it. There are only a few, however, who are situated so.

Prices of brick have not changed materially in spite of the brick demand and of the big business in prospect during the summer.

Mr. Scott of the Scott Mfg. Co., says that business has been quite satisfactory thus far this year. Large numbers of inquiries are coming in daily from different sections of the country and many sales are being made of the "Press that Scott builds." The brickmakers who have placed Scott presses in their plants have been greatly pleased with the results that they have obtained from them and endorse them highly.

The Williams Patent Crusher and Pulverizers are having a nice steady sale everywhere. It is just what brickmakers want to crush clay for brickmaking and gives most satisfactory results. Business is getting better all the time.

The McNeil Pressed Brick Co. with their increased facilities at their plant at Newburn, Ill., are turning out large numbers of brick and they are having a nice business for the output.

Mr. Anthony Ittner says that his plant is working to its full capacity and is shipping all the brick that can be turned out. A ready sale is found for the product from his kilns. Business is excellent and a big business is looked for during the coming season.

The Evens & Howard Brick Co., reports a splendid trade with prospects excellent for the coming season.

A. Saint.

THE ILLINOIS CLAYWORKERS ASSOCIATION'S ANNUAL CONVENTION

REPORT OF THE TWENTY-EIGHTH ANNUAL CONVENTION OF THE ILLINOIS CLAYWORKERS ASSOCIATION.

Champaign, Ill., January 23, 24, and 25.

For the second time, the Illinois Convention met at Champaign, with a gratifying increase in attendance.. Again, the University influence was marked. Professors White, Rolfe, Baker, Talbot, Purdy, Fox and Bain, each contributing interesting and instructive papers on varying phases of clay work. As has been the case for years past, there was a large number of visiting clayworkers from adjoining states, Indiana showing up strongest with a total representation of twenty-four. The success of the convention showed the wisdom of National Secretary Randall who suggested the "return engagement." Hotel Beardsley, while crowded, cared for all delegates in a most satisfactory manner.

For the first time in the history of the Association there were ladies present other than Miss Wallace, of the Clay-Worker, who was made an honorary member of the Association some years ago. Two of the visiting ladies, Mrs. Walter D. Pratt, of Earlville, Ill., and Mrs. Kern Shrum, of Salem, Ind., celebrated the event by taking membership.

The convention was held in the Elk's Lodge room which is admirably adapted to the purpose. There was an excellent audience when President Stipes called the meeting to order Tuesday, at 2:30 p. m.

FIRST SESSION.

Tuesday, January 23, 1906.

President Stipes: The convention will please come to order. Owing to sickness in the family, our Mayor, the Honorable H. A. Blaine, cannot be with us, but I take pleasure in introducing to the Convention, one of our leading citizens, J. R. Trevitt, who will speak for the Mayor.

Mr. Trevitt's Address of Welcome.

Mr. J. R. Trevitt: Mr. President and Gentlemen of the Convention: Our Mayor had promised himself this pleasure, but he has been unaviodably detained, and has requested me, upon his behalf, and in behalf of all of our citizens, to extend to you a welcome. I don't know that I need to say to you that we take considerable pride in the fact that you have chosen our city for a second meeting. We think you must have a kindly feeling toward us at least.

It is the wish of our Mayor, as it is the wish of all of us, that you have not only a profitable time—and that, of course, you will attend to yourselves—but that your visit or stay with us shall be pleasant in all respects. I know that our Mayor intended to extend to you the entire freedom of the city, otherwise he would not have sent his Police Commissioner here to welcome you. (Laughter.) Your President has given me permission to tell you just why the Mayor is not here. The facts are these: Our Mayor is a very ardent Republican, and a great admirer of President Roosevelt, and since the President issued his dictum in regard to race suicide there has been lots of business around at the Mayor's house. (Laughter and applause.)

President J. W. Stipes.

It is our wish that every convenience and courtesy, every facility and opportunity for pleasure be extended to you, and if anything is overlooked or anything lacking, it is the fault of your worthy President. (Laughter.) The fact of the business is that Mr. Stipes practically owns this city, and he has anything that he is disposed to ask for. He started in here years ago in the tile business. He drained all the water off our farms around here, and all the money out of the pockets of the farmers. Then he started into the brick business, and put up these brick buildings around here, and pretty thoroughly covered our streets with pavement, and incidentally he has covered all of our property with bonds, and is recognized as one of the "millionaires" of the city. (Laughter and applause.)

I do not know much about the clayworker's business, and I cannot say much to you on that line. All I know about it is what my friend has said to one of your members a while ago: "Dig up money enough to pay to register among the brick and tile people and become a clayworker." (Laughter.) The first clayworker I remember about was Pharaoh, and I believe he had some trouble in his business. He was in the brick line, and his people went on strike because he quit furnishing the straw. Moses was a kind of a walking delegate, and he made lots of trouble for the old man—I presume you have troubles also in that way. (Laughter.) But really, the tile business has been the means of redeeming our territory here from swamps and changing it into productive, rich farm lands, so that our section has become one of the wealthiest in the State. If the price of lumber keeps going up, we will have to depend upon the brick men for residences and business structures, so that our good wishes are with you for all of your efforts in the brick line—and the other, too, I suppose, although I don't know anything about the other part of it.

I hope you will come again. We don't want to be selfish, but wouldn't mind if you would make this your headquarters for all future meetings. (Applause.)

President Stipes: In behalf of the Association, I will thank the Captain for the flowers he has thrown at me.

(Laughter.) With your permission, I will now read something I have prepared.

PRESIDENT STIPES' ANNUAL ADDRESS.

Gentlemen of Convention:

My friends, you are aware that it is written in the good book "To every thing there is a season, and a time to every purpose under the heaven." A time to weep and a time to laugh. A time to mourn, and a time to dance. A time to break down, and a time to build up. One year ago you had your time to laugh when you made choice of me to pose as President of this Association, I had my time to mourn for a whole year. Mourned that men whom I had learned to love because of their many excellent qualities should unpremeditatedly act so unwisely. But gentlemen, believing that you too sorrow for your one rash act and are now penitent, I forgive you, knowing if prosperity attend our labors, it must be a harmonious working together with our combined wisdom for the best end.

In point of time, our organization is yet young, yet to us who are so firmly wedded to its grand purposes and aims, its strides have been magnificent, and the past twelve months cannot be noted as exceptional. Our friends and helpmates, THE CLAY-WORKER, *Clay-Record* and *Brick*, have not only had a watchful eye upon us in our individual capacity, but have gathered and disseminated news so that in point of useful facts the association today is as one man, and we are again ready in our fraternal organized capacity to commend, criticize, or condemn. And then with a zeal consistent with the purposes of our organization, we must go forward.

I would like to pause here, and if I were competent to do so, take up the individual items of work that were planned a year ago and trace the progressive steps that have been made. But in doing this I would trespass on the fields of work assigned to the various committees, from whom we shall hear in the proper order of business.

And while I have many things that I would like to say pertaining to the details of our common work, courtesy demands that I defer to you who are older and wiser than I. Yet there are, in my opinion, fundamental issues that should ever be kept before us as governing principles never to be lost sight of. We do not magnify our organization when we say, as we do, that the clayworkers are second to no association in this great State of Illinois. And when we say this, it is not for the mere play of words; it is said with a meaning that challenges refutation.

What is the character of the balances with which we shall weigh ourselves? You will answer, the greatest good to the greatest number. True, a few weeks ago, the National Bankers' Association met in the City of New York, and one of the wise things they did there was to confer the honor of President of their Association upon a worthy citizen of the State of Illinois. Recently, some two hundred men of the clan lighted down on the little town of Hoopeston and banquetted their President, John L. Hamilton; John in response to their greeting reminded them that their combined millions represented finance and financiers marvelous.

It is by comparison sometimes that we are better able to see our greatness and our littleness. It would be a pleasing task to make comparisons from several standpoints between the Bankers' Association and our own, but my time limits me to one, to-wit: The Bankers' Association has a membership of seven thousand and seven hundred, made up of the leading bankers from the different States, and Alaska, Cuba, Hawaii, Porto Rico and the Philippines.

Friends, have you ever thought of the army of men in the—not the whole United States and the Islands of the Ocean, but in the State of Illinois that are looking to us for work, for a sustenance for themselves and families? In the assuming and the strengthening of our organization we are taking upon ourselves a grand but fearful responsibility. Machinery has taken the place of men, and co-operation weakens self-reliance. The man out of a job today is far more helpless than the man of fifty years ago. So friends, when we come together to deliberate, it must not, it cannot be alone as financiers, but also as humanitarians. Hence, the importance of having far-seeing, liberal minded men in the ascendency in our deliberations. And to this end we cordially welcome the inventor, the artisan, the educator, the schools and the man of letters as our helpers and co-workers. And just at this time when the whole world is talking peace, when swords and spears are being beaten into plowshares and pruning hooks the laboring man must multiply rapidly. We do not pose as dominant financiers, but as workers—clayworkers—we do not aim at riches. We believe with John Ruskin, that life without industry is guilt, and industry without art and education is brutish. We have not been lacking in industry, but we were not making the rapid strides in art and education that some of you thought our association had a just right to attain, to. Hence, the action at our last annual meeting in appointing a committee to visit our State Capital, and impress upon our legislators the necessity of a school of ceramics. That committee was successful and we shall listen with pleasure to their report. Just what this school may mean for the State of Illinois, none of us dare predict. But I am sure we thank our legislators, and trust that the time is not far away when we shall be permitted to say to them: "Honorable gentlemen, you builded better than you knew."

F. W. Butterworth, Danville, Ill.

Again, the year 1905 has been a very prosperous year for the clayworker. There has been a great amount of building, also a considerable amount of paving. I think this part of the clay industry will be greatly benefited by the change in the Special Assessment law. The large crops and the high price throughout Illinois will have a tendency to make money plentiful, and when this is the case people are more desirous of making improvements. It has been demonstrated for the past two or three years that investments in real estate have been profitable and in my judgment, will continue to be so for some time to come. If so, this is a good time for the clayworkers to get their plants in good shape to meet the demands.

One of the important things is the building of the interurban lines. It is helping in a large measure to advance the price of lands. It is also the means of bringing the people in the country in close touch with the people of the towns and cities and this will broaden the views of both. It will also make more liberal spenders of the country people and spending the money is what makes business. The price that Illinois land has reached, especially in central Illinois, is from $150.00 to $200.00 per acre. The advancement in the price of land will compel the owner to underdrain so as to derive the greatest benefit from the high price land. This will help the tile man.

It has been demonstrated that the system of Prof. A. N. Talbot, for the disposal of the sewerage is a success. This will make it possible for the cities and small towns that do not have large streams flowing near them to have a sanitary sewer system. In time all small cities as well as large will construct sewer systems and this will create more of a demand for sewer pipe. So I predict the year 1906 will be a banner year.

I am pleased to see so many of you come back to Champaign, as this is my home I am exceedingly desirous that each and every one of you shall have a pleasant and profitable time. The excellent program that is prepared for you I know you will enjoy. If there is anything that I can do to make your stay in our city a pleasant one, do not hesitate to call on me. (Applause.)

President Stipes: Our Secretary will please read the next order of business.

Secretary Hartwell: The next is the report of the Committee on Clayworking Schools by Frank W. Butterworth, of Danville.

Report of Committee on Clayworking School.

Mr. Butterworth: Mr. President and Gentlemen of the Convention:

I have not very much of a report to make—I don't know about making any report on this legislative committee. This "graft" investigation has been going on so strongly in the past year, and the chairman of this committee, here, had three hundred dollars to spend with the legislators—and there may be an investigaton. (Laughter.) The committee met in Springfield, first. The primary object of it was to consider ways and means of getting an appropriation. The amount talked about here was $50,000—$25,000 a year. We had no thought at that time of reducing that. The principal thing brought up at the discussion there was whether we should not make it more. Understand, of course, this was the first meeting. We divided the thing up a little bit. Mr. Colyer, who was appointed on the committee on publication, being in the newspaper business, was to get it before the people prominently all over the state. Mr. Hammerschmidt was appointed chairman of the Democratic head, so he took up his quarters at the St. Nicholas with the Democrats, and he told me that the first meeting he had with them they left him "broke." (Laughter.)) Mr. Stipes and I were to take care of the Republican end at the Leland House. Of course, we were all right there; that being a temperance hotel, we were all safe.

After getting through with that part of the business, we thought it might be well to find out what the Governor thought about it. We thought, of course, that the Governor would have a desk out in the front office, and all we would have to do would be to go right up and shake hands with him, but we found him hedged about with sentinels, ramparts posted, as it were, Gatling guns and all guarded like a military camp. We sat down in an ante-room, and we waited about four hours and then we waited about four hours more. There was a very pleasant young man there, the Governor's secretary, or something of that sort, and we found him considerable of a stumbling block. After waiting a long, long time, we finally asked him how soon he thought we could see the Governor, and he answered us in this way, and his remark became the watchword of this Legislative Committee all through the session of the Legislature. He said, "Patience and perseverance will drive snails to Jerusalem." (Laughter.) And gentlemen, I want to say to you right now that if there ever was a job that required patience and perseverance, it was this job that you gave us to do down there. We finally saw the Governor and had a nice talk with him, although .he thought we were working along the same lines as the Geological Survey bill which had been introduced. We explained to him that although it would work in harmony with the Geological Survey bill, it was not the same thing at all. The next morning, we held another meeting and thought we would go around and interview some members of the legislature. They were all very glad to see us, and didn't think we would have much trouble in getting through our bill asking for $50,000 appropriation. The cause, they said, was a worthy one—"but my friend, over here, will introduce that bill for you, of course. I have so many things to attend to, and this man, over here, will get it before the House." And we went to him, and he also gave us great encouragement, but like the first one, had a friend "over here," and that friend had another, and he had one, and finally we wound up at the original starting place. (Laughter.) That was about the result of the first visit. We went down again, and encountered about the same thing. Finally we got some of them interested, but I think we made about fifteen trips. Finally, however, the matter began to receive some attention, and we got the bill through. But every trip we took off about $2,000, and at the end we considered that we had been very lucky indeed to get ten thousand dollars instead of fifty—and I think we were, because it was a start, anyway; so we got $5,000 a year.

The expense of the legislative committee amounted to about the amount donated here—about $300—for hotel bills, printing and such as that. However, we got that much money for the use of the school. The work of the clayworkers in getting this appropriation is not finished. We should stand right back of that school and earnestly do everything we can to make it a success in every way—in advice, talking its merits, and getting the younger generation interested in it so that they will attend it. (Applause.)

President Stipes: Has any one any remarks to make in regard to this report. Prof. Rolfe, we will be glad to hear from you.

Prof. C. W. Rolfe, Champaign: The only remarks I would make in regard to this report would be something I should take occasion to say later on. I think the members of this Association should give to this Committee a vote of thanks for the enterprising spirit they have shown, and for their faithfulness and perseverance and success in accomplishing the work which you turned over to them last year. There is one thing, however, I desire to say. We started out, that is, you started out, to get an appropriation for a Clay Survey, and another appropriation for instruction in Ceramics. The one part, relating to the Survey, was separated from your bill, and was added to the general Geological Survey bill, and consequently the investigation of clays now becomes a part of the Geological Survey. At the same time, the appropriation was made such that it is impossible for the director of the Survey to assign to us in the investigation of clay the amount that was anticipated in the bill, but I think he will always be disposed to treat the clay industries of the State fairly in regard to this matter and do for them anything that he may be able to do. We are doing at the University everything we can to make that school a success. It will be difficult for us to do a great deal of good to the young men, if the young men do not come. We have so far two enrolled; we have inquiries form six or eight others, and today there came a nomination from a gentleman for one of the scholarships which has been offered by the University for the purpose of encouraging attendance at the School. I should be very glad indeed if this matter should take hold enough on you gentlemen here, so you would be disposed to send your son, or your brother or some young man in whom you are interested, or induce at least one to attend the University and take one of the courses that has been offered for instruction in clay work.

I presume everyone in this room has received a circular containing the course of study. I have used the very best means I knew to get a complete list of the clayworkers of the State, and I have made an earnest endeavor to send a communication of this kind to every one of these addresses, and I hope you have each of you received a copy of this circular. If you have not, you can easily get one, by handing me your name on a slip of paper. I would be very glad indeed if at sometime during this convention, every members here would hand me a list of all the clayworkers, and the people who are interested in clayworking, within a radius of 40 or 50 miles of your own plant. I do not know of any better way of getting a reliable list than that. I could then compare it with the lists I have on file, and would feel pretty sure that I could reach every clayworker in the State whenever there is need for it. I hope there will be a need for it a good many times during the year. We want to keep in touch with you, and we want you to feel free to communicate with us at any time.

Let me close as I began, and recommend a vote of thanks to this committee, who, if they had but accomplished one-half of the work they actually did complete in behalf of the clayworkers last winter at Springfield, I should have said that they had fought a good fight and had well deserved an acknowledgment of gratitude from those in whose behalf they had labored. (Applause.)

W. D. Gates, Chicago: If the Professor offers that as a motion, I wish to second it. If he did not, I wish to make it a motion. I think this Association is most fortunate in having a committee with the will and ability to undertake and do the work which that committee did. I would like to suggest, however, if I may, that a large gold medal be hung on the breast of each member of this committee. (Laughter.) I think the Association is to be congratulated on having a committee that would only take off $2,000 each time they made a trip to Springfield, and come off as well as they did in the matter of expenses. I was a member of a committee that went to Washington once, and we had a great deal of trouble when we got through to have our tickets redeemed and to get our baggage back. (Laughter.) This business is only just started. We have made wonderful advancement in getting this school established as we have, and having men at the head of it who have the inspiration and ability to go ahead with the work, but the committee has not done all that is to be done. They have not finished their work because they are men who are interested in this work, and I know they are going ahead with the same unabated, commendable zeal. We are all members of this committee, and we should use every effort in our power to help this school along, and work for it, and see to it that in our own immediate neighborhood, this School comes to be understood, and see that the boy of today has the privilege of this School. We cannot help but go back in our minds and see the marvelous change that has come over our craft in the last twenty years; from the time when it was all in darkness, and we reached out and took a handful of this and that and the other and made experiments, and if we got good results, we would stick to that, and if we did not get good results, we would try something else, and so we would keep on, searching, experimenting with something to produce the desired results, and when we did get the desired result, we locked the door and guarded the secret. When I started, I could not obtain any literature on the subject. Every door was locked. I did not know very much about the business, and those who did know had their doors locked, and sometimes somebody would tell you what some person said could be done with certain material, and you could not get those materials in their proper proportion. We were absolutely in the dark. These State Associations and the National Association and these schools that have been established have brought about an entirely defferent state of affairs. Clayworking has come to be a recognized science, and there is a broadmindedness that has lead the people to believe in the future of the clayworking industries. With the facilities furnished him, the clayworker of today has less need to consume time with experimentation. The information he gets from institutions of learning gives him a very, very great advantage.

This School is going to do great things for this State. We have a State that no one knows what is underlying it. This School is going to promote the clayworking industries beyond anything we have ever dreamed of. We want to let our own immediate neighborhood know it is here for business, and we want to get the young men here and build up this school, and let them get the training and education that will enable them to build up the clayworking industries. We should be very grateful to this committee. It is wonderful to me that they accomplished what they did.

President Stipes: As I am one of this committee, and I am exceedingly anxious to get one of those gold medals, I will let the Secretary put the motion. (Laughter.)

The motion extending a vote of thanks to the committee was put by the Secretary and carried unanimously.

Dr. A. L. Converse, Springfield: I will give a reasonable discount on my medal. (Laughter.)

President Stipes: The Doctor has the advantage of us, for you will remember the legislators were to furnish the medals, and as you are right there on the ground, where you can look after that. (Laughter.) The next subject on the program is a paper by H. Foster Bain, Director of the Illinois State Geological Survey, on the "Relation of the State Geological Survey to the Clayworker."

RELATION OF THE STATE GEOLOGICAL SURVEY TO THE CLAYWORKER.

H. F. Bain: I am not much on reading papers. I wrote one and turned it over to the Secretary, and I suppose, if finished off with some revision, it might be readable; but I would prefer just now to do the "Ruth Ashmore" act, and proceed to have a heart-to-heart talk with you on this matter.

As Professor Rolfe has explained, there was a mix-up of the various bills. A part was taken from the bill relatng to the clayworkers' part of the work, and a part of the money, and was added to the bill of the General Geological Survey. I was not here at the time, nor had I the slightest expectation of being here; I only know what people say. The reason for that was that the work which they proposed to do was exactly the sort of work expected of the Geological Survey—having relation to all the mineral resources of the State and it was thought better to consolidate the two the results of the survey to be applied to the uses of the School. Acting on that basis, at the first meeting of the commission, the one at which I was elected, and which also approved Professor Rolfe's connection with the Clayworkers' Committee, acting on my own authority and trusting the commission would act in the matter afterwards, I made an allotment for the clay work; and, as I was informed yesterday, that allotment as planned, and the work, were approved in every way. The money was especially appropriated for the School of Ceramics, for instruction and also to be used for the equipment of the school. And so far as investigating the resources of the State was concerned, there was no provision, unless it was understood that it was to be with money taken from the appropriation for Geological Survey. Now, if we were to pay for Mr. Purdy's time, physical tests, chemical analyses, printing, reports, and all that line of work, it stands to reason that even with the full amount of money appropriated for the Geological Survey it was not possible to do in one year all the work planned to be done on clay and coal and cement, and so on. So we have had to simply make our plans as to the total amount of work to be done, and then take it up piece by piece. We hope if the Legislature gives us money enough from year to year to carry this work out completely and complete this clay investigation which you have had in mind, but for the present we have simply to take one part. Mr. Purdy has begun work under the direction of Prof. Rolfe, on paving brick and paving brick clays, and this will be followed in turn with pottery, structural brick and drain tile and all sorts of clays to be used in the production of clay products. The actual field mapping of the clay deposits is done in connection with the mapping of the coal and other resources. That is, it is more economical to have a man go into a given region and map out the clay and coal and limestone at one time than to have a special man do it, relying upon special clay experts. It is along that line of work that we expect to co-operate.

Treasurer Wm. Hammerschmidt.

Most of you know perhaps what a geological survey amounts to. For many years, most all civilized countries and some uncivilized countries have had their geological surveys. There is an immense difference of opinion as to what a Geological Survey should be, but most people judge that it is something that is paid for out of the taxes and money of the people. Everything which the Geological Survey does must have a direct practical bearing in view. That is, it is not our province as a Geological Survey to take up matter for scientific purposes, but all technical work, and all work worth while must be based on scientific work. We want to take up those lines which will result in practical benefit. In organizing our clay work that is what we have in mind, and we feel our particular work is the investigation of the raw materials and the process of manufacture, and to some extent the finished product, but that is rather less important from our point of view than the raw material. We want just as much help and advice as we can get. We do not want to do a lot of work and then have you say, "Why didn't you do something worth while," and we think if you will give us your criticism now, it will be much better than after we get through. So I invite you now to give us your advice on what you want done and how it should be done. I feel particularly free to do this because I won't have to work out the details of the clay business, for I have turned it over to Prof. Rolfe and his assistants. I expect to look after the coal interests particularly, and I have made the same sort of a statement to the coal men and have had an immense amount of help from them. I am glad to have met you and hope to know you all better in the course of the work. (Applause.)

(The following paper was prepared by Mr. Bain to be read before the convention, and as it contains some interesting statements in regard to geological surveys, we give it in addition to his informal talk.)

RELATIONS OF THE STATE GEOLOGICAL SURVEY TO THE CLAYWORKER.

By H. Foster Bain, Director State Geological Survey of Illinois.

Within the last century more or less extensive geological surveys have been made by practically every civilized country. These have been of all degrees of excellence and the bureaus which conducted them have varied greatly in organization, in resources and in plans. In practically every country, however, the utility of the survey has been recognized and the fact that it is a proper line of official activity has been accepted by all forms of government. In the United States, both the Federal and States governments have taken the same view. The early military and other governmental expeditions through the west usually included a geologist and from this beginning the present United States Geological Survey grew. In 1905 this organizationn celebrated its twenty-fifth birthday. It now has an annual appropriation of only a little less than two million dollars.

The State bureaus have been far less elaborate. Their resources have ranged from $250 a year to $100.000, but in the aggregate the states have spent and are now spending considerable money in support of geological work. It needs no argument to one who has ever asked a state legislature for appropriations to convince him that there must be substantial return for this money or the work would long ago have stopped. It is, I believe, the honest purpose of every State geologist to give honest returns to the people for the money appropriated, but there is much difference of opinion as to just what work should be taken up and how it should be carried on. In organizing our own survey these problems have occasioned much discussion and I am very glad to be able to go over the matter with you, with a view to getting your suggestions and advice. It may clear up matters a little to consider first the general purpose and nature of a Geological Survey.

A Geological Survey, and by that I mean the Bureau or organization which is charged with the work, is primarily an organization for applying science to industry. Problems of research which are strictly scientific in their bearings are not the primary work of such an organization. It is always difficult to tell when a strictly scientific inquiry may begin to throw light upon a very practical problem, and it is not always easy therefore to draw the line between a scientific and a practical investigation. It is safe to say, however, that it is outside the main purpose of the Survey to attack any line of research which does not give rather definite promise of practical return. In the past there has been no attempt to enforce this rule in any narrow or petty spirit, and I think it safe to assume that in the future a reasonably broad interpretation may be expected. When money is appropriated it is none the less a conditon or tacit agreement between the officers of a Geological Survey and the people, and we should be as loyal in living up to it as though it were specified in the Act. It seems to me, though there is no concensus of opinion on this point, that strictly technical investigations of machinery and processes are almost if not quite as much aside from the main purpose of the Geological Survey. In Illinois there is extra reason for assuming this ground, since the State, through is very excellent Engineering Experiment Station and the Department of Ceramics of the University, makes direct appropriations for this work. Our own investigations must deal especially with materials and in a supplemental manner with products. Our problem is to bring to bear the best that science has to offer on the materials and products of the Mineral Industry with a view especially to stimulating the development of the industry and, as we may, improving the product. The first is our main purpose, and to it our main efforts must be directed.

In answer to the question which might be asked, why the state should do this work rather than individuals, it may be pointed out that a certain range of broad problems is beyond the resources of any individual operator. Even when the individual might have the funds and the disposition to examine, for example, all the fire clays in the state before locating his plant, it is certainly better for an official organization to do this and place the information at the disposal of each intending investor than to suffer the economic losses incident to repeated and less complete investigations by individuals. It is the old doctrine of the greatest good to the greatest number. It needs hardly to be stated that such information, collected at the expense of the people as a whole must be freely given to them and that proper safeguards must be adopted to prevent the funds being used on purely personal investigations for the benefit of a few. It is this requirement which prevents the survey, in the absence of specific appropriations for such work, from making free assays or free analyses except as they fall in line with some general investigation carefully selected and maturely planned.

But the work of a modern survey is not alone that of investigation. There is slight value in the mere accumulation of valuable data. The facts must be digested, put in attractive form and published so as to make them as widely useful as possible. I believe it to be as much the function of a survey to exploit, in a high class manner, the resources of the State as to merely determine what those resources are. It is newer, better and larger industries that are wanted; more deposits used, more men at work, more money coming in from larger scales of higher class products. It is our function to do what we can to bring this about by having the right sort of information on tap or by getting it as rapidly as possible.

To consider a specific line of work in the light of these general principles, the clay investigations may be taken as an example. I take it that the information most desired is (a) Where are our clays? (b) What sort of clays have we? and (c) For what are they adapted? Finally, in certain cases it is important to know what sort of products are now being made from these clays, how this product compares with that met in competitive markets, and whether the grade can be improved. This second line of inquiry I consider less directly a function of the survey and yet to a certain extent we must go into these problems. To carry out these investigations we need both field and laboratory investigations. The different clayworking plants must be visited and samples of clay collected. Unworked deposits must also be sampled and the attempt made in each case to determine for what use the clay is best adapted. The field work should cover investigations of the extent of the deposit, its uniformity, or variability, its situation as regards stripping or mining conditions, transportation, fuel, water and markets. The laboratory investigations should be directed to discover the nature, properties and availability of each clay. They should include chemical, physical and burning tests followed where need be by tests of the finished product to determine its quality.

Such investigations systematically carried on should result in information by means of which the most economical development of our great clay resources could be stimulated. The information should be published in the form of maps, charts and reports, and given wide publicity in the attempt to stimulate our clayworking industries and the use of clay goods. In the years to come it is undoubtedly true that clay goods are to assume a relatively greater importance in human industry than they now have, aside from the normal increase due to a denser population. To take the best advantage of this increase we must have the best knowledge of our resources and of their adaptabilities. We must know what we can do and, parenthetically I may remark we should also know what not to attempt. Our mistakes must be recognized as well as our successes. The work so far planned by our own survey contemplates the thorough study of the clays of the state now used or capable of being used. This work is being done in close co-operation with the Department of Ceramics of the University, Profesor Rolfe being in immediate charge of both. The plan contemplates the thorough study of the industry separately and studies of paving brick and pottery clays are already under way. As fast as men and money are available the other lines are to be taken up while in connection with our geological mapping the entire clay resources of particular areas are being studied.

One of the best means of studying an industry is through accurate statistics. Figures which are not accurate are often more harmful than helpful, and accurate statistics can only be obtained through the cordial and regular co-operation of the producers. It is a prime requisite in all such work that the detailed figures relating to each plant should be treated absolutely as confidential. They should never be published, they should never be seen even except by a properly accredited and reliable official. It is our purpose to do what we can to aid in the collection of such statistics and to that end we have entered into co-operative relations with the Division of Mineral Resources, whereby one of our men will be made an official of their organization and authorized to collect the figures on our joint account. It is believed that in this way increasingly accurate figures will be obtained and the growing importance of the mineral industry of the state will obtain wider recognition. I bespeak your particular co-operation in this work and especially request that you give prompt attention to the official blanks when they reach you. Only totals by industries or, in cases counties will be published and only totals of output in price are asked. No attempt is being made to collect figures of labor, cost, etc., such as the Census Office decennially asks for. An examination of the cards sent will, I think, convince you that you may answer them without any fear of the answers being used to your disadvantage. I believe you will all see the advantage to the State of regularly and accurately collected statistics over less regular and less accurate ones, and I therefore especially request your help in this matter. In this, as in all other lines of work, we would be glad to have your free and frank criticism and we hope by taking criticism of plans in advance to have less criticism to meet when our work is completed.

President Stipes: Is there any one who would like to speak on this subject? There is one thing I want to impress on the next committee we have. The coal men are interested in this thing, so we will enlist his services. The Committee will remember that.

Mr. Bain: If I may be allowed to say a word. Yours was not the only committee that saw the Governor. There was a committee there from the coal operators and one from the Coal Owners Association of America.

President Stipes. The next number on the program is a paper on Drain Tile by Walter D. Pratt, of Earlville.

Walter D. Pratt, Earlville: Mr. President and Gentlemen of the Convention: In being placed on the program for this number, I feel as though a little apology or explanation is necessary for the exceedingly short paper, and that is that I prepared the matter in a very short time, and at the same time, if I were going to speak before a farmers institute in this State, and tell them where the benefits were, it would perhaps be better to go into details, and so for that reason I have made my little paper very short. (Applause.)

DRAIN TILE AND TILE DRAINAGE.

By Walter D. Pratt, Earlville, Ill.

As the use of under-drain and later tile-drains for removing the surplus water from localities, where it was a detriment in many ways, has been practiced for many centuries, and the benefits from their use have been published in books and periodicals at different times, I think a brief mention of tile-drainage and its advantages will be sufficient.

From an agricultural standpoint it can be said tile-drained lands do not hold frost so late in the spring, and, by removing the surplus water, permits of earlier cultivation, it also allows the ground to become warmer earlier than undrained soil, thus promoting more rapid germination and growth of crops.

Farmers and those cultivating the soil readily appreciate the ease with which drained soils cultivate, requiring much less labor to prepare for and tend the crops.

They notice that when the soil is full of water to a point at or near the surface, the the roots of plants growing thereon cannot penetrate below the surface in search of its food, which is obtained from the soil, and therefore will die, or, at most, make a very unsatisfactory growth.

We find that when the surplus water is removed, that the air has much freer access to the pores of the soil, making possible the chemical changes necessary to make the elements available food for the growing crops. This change, I believe, is also assisted by the soil bacteria.

Again, tile-drainage, or under-drainage, producing a porous condition of the soil, provides a large storage capacity below the surface for the rainfall, preventing loss of soil and crops by surface washing, allowing it to pass through the pores to the drains below, and in this way holding the moisture during longer periods between rains.

We are taught, also, that in dry times, capillary attraction brings moisture from below within reach of the roots of growing crops.

Under-drainage as a sanitary measure cannot be disputed, as by such means many depressions containing stagnant water have been redeemed and the source or home of disease germs removed.

When financially considered, there is nothing the land-owner can invest money in with assurance of larger or more certain profit as, by the proper use of tile, low and waste lands can be made to equal in value any of the surrounding cultivated fields, and yield usually considerably more.

Some suggestions about the drains may be in place here, such as the outlet, fall, size of tile in drains and laying to a true grade established by an engineer. The distance of drains apart depends upon depth laid, nature of subsoil, etc.

Very little need be said about the tile used, if they are straight, round, cut true on ends and well-burned. (Applause.)

President Stipes: There are some drain tile men here who may perhaps like to say something on this subject.

J. M. Mamer, Campus, Ill.: I do not know that I ought to say anything on this subject, I just came in and haven't got my badge as yet. I had occasion recently to be in the southern part of the State for several weeks, and went over to Murphysboro, the county seat of Jackson county. It would seem, from the talk I had with farmers there, that a very few if any of them know anything about tile drainage. It seems that anybody who don't get the "shakes" is regarded as out of style. That used to be the case here some years ago. But just to illustrate, with one incident, how some look at the question. I was talking to one man about the benefits that would come to the town there if they ever got to putting in tile drains. After a long talk, summing it all up, he said he thought it would be an awful job for the town to have to put in all those tiles.

General Discussion.

J. M. Powell, Brooklyn, Indiana: Mr. Pratt's paper has said about all there is to say on the question. It is a strong paper, and the points are well taken—so well taken that no one can attempt to dispute them. We all realize the benefits of tile drainage in Illinois, Indiana and Ohio, and there is no dispute as to that. There may be some localities, as the gentleman has just explained, where they do not know the benefits of tile drainage, and possibly we might benefit our business by letting them know; but in this day and age of the world men in general have found it out. I think that the subject has been well treated in the paper. However, we could let our customers know something about the benefits occasionally, and it would help us as individuals—those of us who are engaged in the business. But outside of that, 'most everyone knows, and there is just occasionally a man who does not know of the benefits derived from tile drainage, but nearly every one know this now.

G. C. Stoll, Wheaton, Ill.: I would like to ask Mr. Powell or some other gentleman who has been laying tile a good while; in under-draining, how far apart should tile be laid to thoroughly drain? For instance, if you lay tile one foot underground, how far on each side will it drain? Will it drain sixteen feet on each side of this drain, or will it drain more or less? Or if you lay it two feet, will it drain 32 feet on each side?

Mr. Powell: The deeper the drain is, where the soil is adapted to it, the farther it will drain. It is not practical to lay tile less than 30 inches or three feet, especially in this soil, according to what I know of this soil. There are some soils too close and compact, and it won't do to lay them so deep. In most of our soil in Indiana, in that black land, we lay them four feet, and in that case, they will drain three rods on each side. I have a piece of land where I put in eleven hundred rod of three-inch tile, any where from 3½ to 5½ feet in depth, and I never lost a crop. Always got the best of crops, and always been able to plow the land a little earlier and harvest the crops a little earlier. I have based my experience from that and from what I have read, and I think tile will thoroughly drain land a distance of three rods, and some lands six or eight rods, and some places it will not drain over a rod, but I think in ordinary drainage, tile should be laid three or four feet deep.

President Stipes: I think we have this same subject on the program for general discussion later on. Our friend Mr. W. D. Gates, I understand, has a business engagement—in other words, he says he has a contract in view he must get. We had him down for Thursday morning, but he must leave this evening, so in order to get the benefit of what he knows, we must hear him this afternoon. Mr. Ittner has kindy consented to read his paper later on, and we will now hear from Mr. Gates, of Chicago, on "Clay Products in our Recent Fires." (Applause.)

W. D. Gates, Chicago, Ill.

CLAY PRODUCTS IN OUR RECENT FIRES.

By W. D. Gates, Chicago, Ill.

Mr. President and Gentlemen:

I knew I would get a pretty good crowd to talk to, if I could get on the first day's programme. A good many years ago, I remember, my mind goes back to the first Illinois Convention I ever attended, and I cannot help but think of the change there has been in the intervening time, a change in the character of men, a change in the methods of obtaining information, a general change in the workings of the craft. I remember at that convention, I came down with a sample of clay in my pocket, showing it to everybody, and I finally ran onto an old veteran, and I reached into my pocket for that sample and it was gone, and I said, "I wish I had that sample here to show you," and he said, "Never mind, it don't make any difference. I tell you, my friend, I have been in the business twenty years, and I could not tell you anything about the clay until I had burned it." All these years, I have been wondering over the wisdom of that old man's speech, not that he had not learned anything in twenty years, but that he knew how little he did know.

I suppose you have the same experience that I have. Men come in to see you, with little samples of clay, men from every walk in life, in the hardware business, and dry goods, and grocery business, lawyers and ministers and physicians and bankers, who do not know the difference between a clay bank and a National Bank, (there is a difference, and if you own a clay bank, its a pretty good thing to have a National Bank.) These men have become interested in a clay bank and are coming in all the time. They have experienced trouble and instead of taking the course they should take, as in case of sickness, calling in a physician, or of legal trouble, the man who is an expert in the legal profession, they waste time in experimenting. Finally, in their dilemma, they do go, perhaps, to some one supposed to be an expert in the clay business; and when a man has seemed to single me out as one able to help him to some extent, I attempt to tell the truth—give him as truthful account of his case as it is possible to give —and he goes off seeming to think that I have been trying to "down" him, and he is my enemy.

I have all along had the theory that the Almighty had planned great beds of clay all over our country, over our State, and adjoining States, and throughout the world, but he has left these beds of clay there to be mixed and to make these clays valuable, they must be mixed with brains. Now when anybody looks doubtful, and tries to find out where we get our clay, I have never succeeded in demonstrating to them where we got it. The best results are from mixed clays—God Almighty has left it to us to mix those clays. We have three or four clays on our place, from neither one of which is made the article of merchandise, but by mixing them we may produce the most elegant product. It may be by the mixing in of something from the outside, but it is our business to find out the required article, the proper ingredient to be mixed with the staple, raw material entering into the composition of our wares.

This does not look like getting down to my subject. I hardly know what my subject means. When I received a letter from the Secretary—and he is a most affable Secretary—thanking me for promising to read a paper, he did not say anything as to what my paper was, but simply thanked me for promising to read a paper. I said, "I'll just go you on that and be there." I have promised to read a paper two or three times before this association, and have always failed to keep my promise, so I thought I would fool him this time, and when I looked at the programme and read "Clay Products in Our Recent Fires," I wondered what he meant, I wondered what business he thought I was in. Then the horrible thought struck me, had he been seeing what we had been getting out of our kilns. (Laughter). You know that is too sacred a subject to bring up here. Then it occurred to me that he might possibly refer to the Baltimore fire, and I remembered a valuable resolution that I made at that time, that I would absolutely begin a system of inquiry and I got all ready to go to work and make tests and it is marked down as an ignominious failure. I suppose you all know as much about the Baltimore fire as I do, and all our other fires, except our own personal fire.

Immediately after the Baltimore fire a great many of our Chicago architects went down there, as well as others, to study on the ground the effects of the fire. Unfortunately circumstances would not allow me to go, and I did not have the opportunity of studying at Baltimore the effects of that great fire. But I have given study to the subject.

Now, you know, that at the Chicago fire there were certain buildings that stood almost undamaged from the effects of that fire, and the universal verdict from all the experts who ever investigated the subject has been that well burned clay withstood the effects of that fire better than other material.

Many things must be taken into account. I remember the discussion between the cement men and the clay men. I know we had a meeting of the Architects' Club, where they had an expert hollow-tile manufacturer read a paper applauding the achievements of hollow tile in that fire; and immediately the cement men came back at them with a summons for a grand rally of the cement men—and we had quite an argument—or rather, I did not, the rest did. I appealed to the warring factions, and suggested the propriety of taking that fire lesson seriously and saying to ourselves, "Let us study the fire each one for himself, and not run down the other man's material—see how each can be benefited and make better work."

Everybody knows that we have the materials that resists heat. Everybody knows that when we start a fire in the kiln the fire blazes up against the crown wall of the kiln, and is increased day after day, playing on the under side of that nine-inch brick wall, upon which you can walk up and down, walking upon it as you could upon no other material: you know you can do that although the heat is continuous and increasing. You know, and everybody knows, that when you want lining for a furnace of any kind, you go and get fire brick. But there is another thing that enters into the manufacure of our wares that is to be taken into consideration, not as universally realized. We have all been working to make a product of great resisting qualities, but I do not think that we have taken into consideration what is wanted to make ware for standing fire. People jump to the conclusion that because our ware is made in a heat of from 2,000 to 3,000 degrees, therefore it is fire resisting—fireproof. But coming back to your furnaces, you do not take any old brick to build up your furnace. You know where to get good fire brick, and you get them at that particular place. If you are building a furnace for exceptional heat, you get exceptionally good brick. If the heat in the furnace is not to exceed a certain temperature, you get the kind of clay that will best stand that action. Silica brick will stand continuous heat better than sudden heating and cooling. And we have to take into account the proper burning of the clays so the brick will stand the alternate heating and cooling.

Some pictures are shown of the Baltimore fire results that are misleading. One picture I saw of a rotunda entrance, where apparently all the tile had dropped off. A little investigation showed that after the tile men had put in their ceiling, the marble men came around to make some alterations and do some finishing work, and had taken a hammer and broken off the tile; and this was shown as an example of failure of clay in fireproof construction.

The question of mixing enters very largely into this subject, the texture of the goods. Upon this largely depends the resisting-qualities of the ware to sudden heating and cooling. The sudden throwing on of water also is a matter that has to be reckoned with, and the resistance of the ware to treatment of this character while at a high temperature depends largely upon the quality of the clay. That is one of the interesting lines of investigation. You may burn two or three or more articles of clay at the same temperature—that is, at 2,000 degrees—and get entirely different results. You know (and I have used the illustration before somewhere; I think I spoke of it to the paving brick manufacturers), agents will come into your office in the city sometimes with a lamp chimney, and boldly throw the article down on the floor. It does not break, and you buy it forthwith. It has been tempered with reference to the work that will be required of it. You temper your coal chisel with reference to the particular work it has to do; it is of just as much importance that you temper your ware, and it is with the same objects in view—to make it equal to the demands that may be made upon it. There is the greatest necessity of watching the heating **of the ware**, because, as fessor Orton has shown, there are a great many things that are points of danger in heating; and the points of danger in cooling are just as great.

I have in my grip something which I have been experimenting with. We have been putting in a little laboratory furnace for experimental purposes. We put in three little porcelain vases, all of the same clays, clays which burn to a copper color in a certain heat, and then changing the reducing conditions in the muffle and putting in another vase and burning it to a blue, and changing again, and burning it to a red, all made of the same material, burned in the same kiln, all carried to the same temperature in the same kiln. It is simply a visible change in the oxide and sub-oxide of copper.

I did not come here to make a long talk on this subject, but that is what strikes me as being the one thing, that we ought to work for. We should study the effect of the fire resisting qualities, just as we study to get ware for particular use in furnaces. Get an idea of how great a heat a particular ware will stand under tests, but remember it will not take that heat, and stand it under all circumstances. There are some questions involved that are new to me. Many startling propositions arise in the course of investigation.

Gentlemen, I am glad to be with you, and I hope I may have thrown out one little idea that may help you. (Applause.)

Discussion.

President Stipes: Dr. Converse, would you care to say something on this subject?

Dr. Converse: I believe I have nothing to say.

President Stipes: We will be glad to hear from Mr. Butterworth.

Mr. Butterworth: I would not presume to say anything after my learned brother, but I would like to bring out one thing which may be just a little bit misleading. That is, that the Baltimore fire was a very unusual fire. I doubt if it would be a good idea to make our ware of such a nature that it would be certain to resist a fire of that character. Had we better not take into consideration that that was a very unusual fire, and try to make our ware so as to meet the requirements of an ordinary fire.

Mr. Gates: I think our fires are usually very "unusual" fires. I believe in making our wares the very best possible and then if you don't have an unusual fire, they will stand any way.

D. O. Loy, Wataga: I read in the different clay journals from time to time about tile factories burning down. It would be well for clayworkers to build their factories so perfectly that there would be no danger of their plant burning down. Then in case of fire, our buildings would stand as advertisements of having survived the extraordinary test, and advertise to the world that clayworkers make a material that fire cannot destroy.

Mr. Gates: There is one thing I would like to say in response to Mr. Loy, that there is one thing that would interfere. When we started we built a factory which we thought was large enough, then after a while we added a shed here, and then pretty soon we added another one somewhere else, and we had a collection of buildings there that would astonish some men. We did not make it fire-proof because we did not have the time, and when it burned down we did not have the time or the money either to make it fire-proof, we are going to, of course, when we get into the next world, I am going to build a fire-proof one. (Laughter.)

President Stipes: If no one cares to discuss this matter further we will take up the next—a paper by Prof. Rolfe on "Some ways in which the University offers to help the clayworkers."

Prof. Rolfe: Mr. President, I wish Mr. Gates had kept on. I was interested in what he was saying. and I would a great deal rather hear him than talk myself, and I hope the time will come when we can hear from him at greater length.

SOME THINGS THE UNIVERSITY HAS DONE AND SOME THINGS WHICH SHE OFFERS TO DO FOR THE CLAYWORKERS.

Prof. C. W. Rolfe, Champaign, Illinois.

Mr. President and Gentlemen of the Convention:..

One year ago I came before you with two propositions which were favorably received and which you, through your committee, have carried out. I come now with my report.

Just here permit me to say that the clayworkers of the State owe much to the members of this committee for their intelligent and unselfish activity in presenting and urging these matters before the Legislature. It is my opinion that the bills would not have passed except for their whole-hearted efforts.

While these matters were under consideration before the Legislature, the Clayworkers' Bill was divided, and that portion of it which provided for a survey of the clay resources of the State was attached to the General Geological Survey Bill with a reduced appropriation. This reduction I cannot but consider as most unfortunate, but, as Dr. Bain has already told you, your interests in this direction will be looked after by the Survey, and their investigations will be pushed as rapidly as the small appropriations made to the Survey will permit.

The other portion of your bill, which provided for the installation and equipment of courses of instruction in Ceramics, passed without material change. This bill carries an appropriation of five thousand dollars per year for the support of the school, and my only regret in the matter is that we were so modest in fixing the amount asked for. I hope that when your new committee shall be appointed to present the needs of the school to the next Legislature, it will be instructed to increase the asking. I also hope that you will see that this committee is appointed before the close of this meeting and that you will carefully select for its members persons who will have large influence with our Springfield friends. I ask this because it seems to me that we should have all our plans formulated and our bill before the Legislature before your next winter's meeting.

The Senate Committee struck out the clause creating an advisory committee, but President James acting for the University, appointed Messrs. J. W. Stipes, F. W. Butterworth, D. V. Purington, W. D. Gates and A. W. Gates as such committee.

Acting under the advice of this committee, the school has been organized under the plan set forth in a circular which I have endeavored to mail to every clayworker in the State. Laboratories have been equipped and a small kiln house capable of accommodating two small kilns, frit furnaces and a dry pan with motor, has been erected.

We hoped to have all these things in place and everything ready for the opening of school in September, but educated Ceramists are not numerous in this country, and men having the combination of college training, practical experience, and ability to teach are hard to find. So, although we began our search as soon as Governor Deneen had signed the bill, and were ready to offer a good salary, it was October before we succeeded in finding a man who possessed these qualitites and was not already so firmly rooted that he could not be moved. At that time we considered ourselves fortunate in securing the services of Mr. Ross C. Purdy, who, in addition to a course in the School of Ceramics of the University of Ohio, had four years' practical experience in a large factory and served three years as assistant to Prof. Orton in his school. He is also a member of the American Ceramic Society and of the National Brick Makers' Association. Mr. Purdy began his work on the first of October and since that time, in addition to advising with regard to the organization of the school, formulation of courses of study and equipment of laboratories, has been making the acquaintance of Illinois clayworkers and Illinois plants

Within the last ten days we have also been fortunate in securing the service of Mr. Junius F. Krehbiel, who is a graduate of the New York State School of Ceramics, has had one year's practical experience as Superintendent of the Robineau Pottery of Syracuse, N. Y., and is now instructor in the school from which he graduated. We hear excellent reports of his teaching ability. Mr. Krehbiel will begin his work with us the first of the coming month.

In this connection I wish to call especial attention to the scholarships in Ceramics offered by the trustees of the University. One scholarship is allowed to each county in the State each year. They are good for four years and their value is one hundred and six dollars each. Candidates for these scholarships are to be nominated by this Association, but they must be able to fulfill the entrance requirements of the College of Science either by examination or by the presentation of a certificate from an accredited high school. If any county fails to nominate a candidate for a fellowship, the vacancy will be filled by assignment from those counties which nominate more than one. These scholarships will materially reduce the expense of a college course for your promising son or for any bright young man in whom you may be interested.

Competition is making the demands upon the successful business man more and more exacting every day, and this condition is likely to increase rather than decrease. The young man who would be really successful in business must be as well informed at twenty-five or thirty as his father was at forty-five or fifty. This is a serious matter and there seem to be but two ways in which this rapid development of business power may be brought about. The young man may be put to work in some large factory at an early age and be expected to absorb the details of the business by virtue of his contact with them. Sometimes this plan produces a man of exceptional business ability, but far more often it results in his becoming a clerk, a mechanic, or a rule-of-thumb foreman. This failure arises partly from his lack of initiative and foresight. He may be ambitious, energetic, and industrious, anxious for success, and in every way willing to do what seems to him necessary to become efficient; in other words, he may be naturally capable and in every way willing, but his ideals are almost always low. He does not understand what the requirements for a successful business career are and so does not take advantage of all his opportunities. Another reason for the failure is that he is usually working on a salary and his employer finds that his interest lies in keeping him at one particular line of work. Even if the employer takes an interest in the lad and by frequently changing his employment seeks to give him a general acquaintance with the business, he finds real progress difficult, for while the workmen with whom he comes in contact are able to tell him how to do things, they are usually not abe to give him a reason for their methods, and so he goes on accumulating methods and rules which are available in particular instances, but is largely left in ignorance of the underlying principles which would enable him to vary these methods to meet new conditions. The average young man who enters a manufactory at an early age never really comes to know his business, occasionally one reaches a fair control in middle life, and the exceptional one gains a good knowledge of its principles. It is an uphill road from start to finish.

I think you will agree with me when I say that all this could have been changed if the boy had first been taught the scientific principles which underlie all manufacturing processes and then placed under the care of men who not only know the most approved processes and the principles which underlie them, but are able to explain them in a way which the boy can understand. These men, whose sole business it is to instruct, attain a wide grasp of the principles of the business and great facility in imparting their knowledge rapidly and in devising laboratory exercises which will quickly give manual dexterity as well as brain power.

There is a notion abroad in the business world that educated men are apt to be impractical. The teachers are themselves largely to blame for this. Until recently most teachers believed that the requirement of an education was essentially a course in mental gymnastics and they had arranged a series of exercises in mathematics, the classics, philosophy and kindred subjects which certainly did accomplish the object sought, but they fell into the error of maintaining that this was the best, or as many insisted, the only series of exercises which would bring the desired results. They failed to recognize that it is the judiciously controlled exercise of a muscle or a faculty that gives it power, and not the particular piece of resistance to which its force is applied. The result was that the student came from college really powerful mental engines but with no belt to connect them with the machinery of the business world, and hence they drifted into the so-called "learned professions."

Within the last fifty years a new idea has been gaining ground with the educators of this country. The demand that young men shall become men of affairs before they have hardly reached physical maturity, has made our educators feel that they must devise other exercises equally effective with those formerly used in developing mental power, and which shall at the same time bring to the student familiarity with the practical problems of the business world. This idea has taken the form of a demand which the educational world has been and is trying to meet, and the result is seen in the constantly increasing attendance at the schools in which these lines of work are being developed. This new idea has only recently invaded the precincts of the clayworking fraternity.

C. W. Rolfe, Urbana. Ill.

Until recently many ceramists seemed to believe that the surest road to success in their business lay in the development of secret and well guarded formulas, and so far as possible, keeping all knowledge of their processes from the world. These manufacturers naturally did not look with favor upon the introduction of schools whose declared purpose was to give their students, as a part of a liberal education, the best formulas and best methods which could be obtained; and not only this, but to give them as well the ability to develop formulas and processes for themselves which were better than any then in use because based on scientific principles and hence more easily controlled and more readily varied to meet changing conditions.

To Prof. Orton, of Ohio, belongs the credit of making the first breach in this Chinese wall of exclusiveness and, although for years he had serious difficulties to overcome, the recent rapid growth of his school and the readiness with which his graduates find lucrative positions prove that the workers in clay are beginning to recognize the correctness of his point of view. I earnestly hope that the good work he started may go on, and that the spirit of the schools may come to prevade the individual workers and their associations until the annual meetings shall be looked upon as clearing houses to which each worker shall bring the results of his year's work and receive in return his share of the world's progress in his art.

Since the surest and safest road to success for the future ceramist lies through some school which is especially equipped to meet his wants, I come before you today to plead his cause and to urge *that you give the boys a chance*. It is your duty to give them the best preparation which lies within your reach for their life work, and if you can place them where at twenty-five (this is intended to include two or three years of practical work after graduation) they will have a more thorough knowledge of the ceramic industry than their fathers had at fifty, what better investment could you make for them?

The University of Illinois offers your son the best resources it can command in his line. The State has used your money for the organization and equipment of the school. It will continue to use your money for its support. It is to be hoped that you will make the best possible use of the investment.

The school wishes to do more than offer instruction. We believe that our equipment and our relations with the other departments of the University will enable us to solve many problems which could not be readily worked out by the owner of a plant, and we wish to keep ourselves continually employed upon problems of this kind which are of general interest. It would obviously be improper for us to expend any considerable amount of time or money upon local matters which would benefit only one or two firms, but we shall be glad to receive suggestions as to problems whose solution would be generally helpful and we will always give them careful consideration.

We believe it to be part of our duty to gather information in regard to clayworking from all sources and to disseminate such as would be of general interest. For this purpose we shall issue bulletins from time to time and we hope that you will find them helpful.

Now, gentlemen, I hope the future will prove that in the inauguration of this movement we have taken a long step in advance, one that will be useful and helpful to many interests besides the clayworkers.

Please remember that this movement is yours as well as ours. It is a sort of partnership whose terms, as agreed upon last winter, are that you are to induce each Legislature to supply the funds necessary to carry on the work which is agreed upon by the conjoint action of your advisory committee and the University and we are to carry out the plans so made. In this way each will have a voice as to what is to be done and a part in its execution. It seems to me that the movement must have a bright future if all interested parties are willing to bear their part as are those connected with the University.

I thank you for your attention and support. (Applause.)

Mr. Rolfe: I wish to say in addition to what I have read: we have also made provision for those who do not care to take the full course, and this statement you will also find in that circular. We admit as special students to the University any young man over twenty-one years of age, and permit him to take any work in ceramics that he is fitted to take by his previous preparation. We would not permit him to take a course which he showed himself not qualified to take with advantage to himself. Anything he is qualified to take, we will permit him to take. If this young man when he enters is not able to fulfill the requirements of the University for entrance to the University after he has completed 30 hour's work, that is, one semester's work in the University, we will give him credit on entrance requirements for the practical ability which he may develop. In other words, after he has been in the University long enough so that we may know him and what he is able to do, if in the judgment of the instructors, and he is found capable of taking up work of the ceramic course, we will credit him for his ability on this requirement and allow him to take up his regular course if he chooses to do so.

General Discussion.

President Stipes: This paper is now open for discussion.

Mr. Gates: I do not know just exactly the proper method of appointing this committee, but there certainly should be a committee appointed, and if it is in order now, I would make a motion that this same committee be continued for the next year. They have learned the way to the Governor's office, they know the best chair in the ante room, and they have even found out the addresses of the coal men. I do not mean that that medal should be recalled and put off, not by any manner of means. (Laughter.) That medal is only a slight recognition of their efforts, the reward for what they have done. I do not feel like putting an increased burden upon them, but we had better continue them.

H. de Joannis: Second the motion.

Mr. Gates: Now, the President probably would not care to put that question, so I will put it to the convention myself.

Mr. Gates then put the motion, which was carried.

President Stipes: Mr. Gates is a little bit too swift for us. If there is any way of enlarging this committee and getting him on it, I would like to see it done.

Mr. Butterworth: I will give up my medal to Mr. Gates. (Laughter.)

Mr. Gates: That is a business of the past.

Mr. Butterworth: I move the committee be enlarged to take in the whole Associaton, and that Mr. Gates be made chairman of the committee. (Laughter.)

Motion seconded.

Mr. Gates: That is a business that has been transacted, and it would be decidedly discourteous and unfair to the Chairman.

Mr. Butterworth: I did not mean to be discourteous to the Chairman, so I will withdraw that part of the motion, but I want Mr. Gates on that committee, and I move the committee be enlarged one and that Mr. Gates be added to the committee.

President Stipes: It is all right with the Chairman, and the motion is now that Mr. Gates be added to that committee. All in favor will say "aye," and those opposed, "no." The motion is carried, and Mr. Gates is appointed a member of that committee. We will now go back to the discussion of Prof. Rolfe's paper. Dr. Converse, you ought to be able to say something on this question.

Dr. Converse: I want to say this to you, in regard to the study of ceramics as they are going to be carried on over at the Universty. I reached a conclusion a good many years ago that when a scientific man said a thing was so, it was not very good judgment on our parts to undertake to argue with him that it is not so. I say that because I know that scientific research in every direction is proving to the world that a great many things of importance have been neglected until properly investigated. I suppose there is nothing that we are so familiar with as mud, and sometimes we think we know all about it, but we don't know very much about it, and I predict that the work of this Institution in the direction of our industry will not only help us to put money in our pockets, but it will develop the resources of the State of Illinois in a way that will be wonderful. It is not going to be in the interest of agriculture, but in the interest of building and building materials of which we are greatly in need this day. We are going to receive help from that institution in a way that we have never thought of before.

The more I think of this, the more it grows on me. I do not expect to be in the clay industry very much longer. I have no one in my family especially interested in the work, but there are young men in the State of Illinois who will be glad of the opportunity which is going to be given them of informing themselves upon this important subject, and the result will be that it will add thousands of dollars to the State of Illinois in material wealth, besides adding comfort and luxury that is beyond our conception.

I do not think Mr. Butterworth meant that when he said he moved that the whole of the Clayworkers' Association be added to that committee, he said it in a spirit of levity, but it was an inspiration that came to him and is a suggestion in the right direction. I tell you, gentlemen, you ought every one of you be wide awake to this opportunity, and keep your eye on this University and see what it is doing. As has been suggested by both of the Professors, they will be glad at all times for suggestions from us from time to time in the direction in which we need help. They cannot give all that help at once, but it is going to be a growing work with them as well as a developing work with us. I do not want to magnify the importance of the work which has been started in a small way, but it is bound to result in a great undertaking. (Applause.)

Mr. Butterworth: It may have been said in a spirit of levity, and may have given that impression; I want to say I was very earnest in saying that I wanted every member of this Association to be a member of the Legislative Committee, because we certainly need the help of every clayworker in the State of Illinois, not only to get what we want from the Legislature, but we want them individually to talk up the University and this course in ceramics, which I gather from Prof. Rolfe is going to be essentially a practical course. It of course must be scientific, and a lot of theory in it, but the young men to be graduated from this course will be as nearly as possible, practical clayworkers. Am I not right, Prof. Rolfe?

Prof. Rolfe: We expect to put them in a position where a very short residence or stay in a first-class establishment will put them in condition to be practical clayworkers.

Mr. Butterworth: That is what I wanted to bring out. This school will be just as practical as possible for a school in ceramics to be. Look at the work of the National Association with Prof. Orton. The National Association appropriates $250 a year to the Ohio School of Ceramics and they get every year a paper that is simply invaluable. The paper that was read a year or so ago on the "Influence of Carbon in the Burning of Clay Wares," has simply been invaluable to everyone using down-draft kilns, no matter what their material may be. This was obtained at an expense of only $250. The Legislative Committee has succeeded in getting for you $5,000 a year, of which quite a large portion can be spent in research. If we can do as much good as the National Association has done with $250.00, how much more good can be done with a large portion of $5,000?

Mr. Wm. Hammerschmidt, Lombard: The amount allowed that Legislative Committee was ridiculously low. I would like to remind the members here that the Legislators are to be elected this fall and they will be around passing petitions, and under the new primary law you can get in your work. You can go to them and say we are going to have something that I want you to help us along. It will make a great difference if you will all help. I know that some of our Legislators are going to be re-elected this fall, and we want to let them know that we expect to call on them again, and that we expect them to help keep this school going.

Mr. Stoll: I understand that this committee had some money appropriated from this Association, or from some members of this Association to defray the expenses of this committee at Springfield. I don't know where this appropriation is to come from this year. Now the committee has been enlarged by one, and he will have to have some money to spend; he will have to show that he is a "good fellow." We will have to have some way of raising same. Whether it will be by raising the dues from $1.00 to $3.00, or whether by taking up a subscription. But I think something should be done and done now that this money would be available.

Dr. Converse: I want to say one word in that connection. I have had a great deal of experience in legislative work, and if there is one thing that people generally are badly fooled in, it is about legislative work. If you have a measure that is no account, or have an axe to grind for an individual, and if you have money with which to work it through, there will be plenty of "grafters" reaching out for it, but I want to say to you from a legislative experience of over thirty years—

Mr. Hammerschmidt: You don't look it. (Laughter.)

Dr. Converse: In working with the Legislature of Illinois, that if a man or a committee can go down in that Legislature in a patriotic spirit and give them to understand that it is not an individual enterprise of his own, but something good for the State of Illinois, and something that the State of Illinois should be interested in, I have never known yet that sort of a man or committee to fail to get the men to help his enterprise. Now, gentlemen, I know I am right. There has been some intimation here of the difficulties of that Legislative Committee. The difficulties were natural ones. It was hard to get the committee together; they had other subjects in which they were interested. That committee in both the House and the Senate was treated with the greatest respect, and they gave us an opportunity to be heard at the very earliest moment. I have had an opportunity to talk with a great many governors on a great many subjects, and I want to tell you as a member of that committee. that the Governor was accessible to us just the moment that those who had former engagements with him were out of the way, and greatly to my surprise he talked as intelligently upon this subject as any man on this floor has talked to-day. It was not a new subject to him. His sympathies were with us. But let you or I begin to undertake to force a measure that would have the appearance that there was money in it to be gained by you or me individually, and you will find plenty of "grafters" reaching out for what they can get. Honest, legitimate business before the Legislature of Illinois, and I presume other Legislatures are the same, can be brought before them in a gentlemanly way and carried through without any money whatever. The members of this committee have said somethings in a joking way, but I tell you, it is not money that is required. It is good common sense and perseverance that is necessary in order to get your wedge in. (Applause..)

Mr. Stoll: I do not want to be misunderstood in this matter, but I understand if we do not make some sort of an appropriation for the members of this committee that when they go down to Springfield, they will have to bear their own expenses, and I think we should give them money from this Association to defray their legitimate expenses, such as car fare and hotel bills, etc. That is what I meant. I did not mean that they should give money to any of the legislators or anything of that sort, but I meant to defray their legitimate expenses.

Mr. Gates: It was on my account and to help me out, that this was suggested. (Laughter.) I want to say this, and it to rivet what Mr. Hammerschmidt has said. And that is to work with our legislators. My experience is that the one thing that appeals to the Legislature more than anything else is votes, and the reception they will get when they get home, and we should remember what friend Hammerschmidt has said, and keep after these legislators and hammer that in and let them know what we want and give them to understand that there will be something doing when they come home if they do not look after this matter.

Mr. Butterworth: I would like to take back anything that I may have said in my report in regard to the use of money, and criticising the Governor or the Legislators, and whatever I said was entirely in a joking way. We were certainly treated on the whole in Springfield in the very best way possible. I remember distinctly the Governor postponed his dinner an hour and a half to finish the discussion which came up, and I would not have it understood for a moment that we were complaining of the way we were treated.

President Stipes: I think most everyone understood that, unless it was perhaps the Doctor. I think Mr. Butterworth wanted to impress upon you the experience of this committee. I would say for myself and Mr. Butterworth, that it was our first experience and so long as the Doctor was along, it was all right. It was a good thing for us. So far as expenses went, I do not believe any of the legislatures got any, of that money. Did they Frank?

Mr. Butterworth: Not after you and Bill and I got through. (Laughter.)

President Stipes: I think the railroads and the hotel people got the most of it. Is there anything more to be said upon the subject?

Dr. Converse: Yes, there is. Now, gentlemen, I can take a joke as well as anybody, I think. Such things as this continual harping and joking on subjects of that kind lead the average man to believe that they are genuine. Now, I will tell you how genuine they are: I have had applications—and some of the rest of you have,—for a measure the passing through of which footed up a bill amounting to twelve hundred dollars that was expended in the Legislature at the last session for business that did not require twelve hundred cents. You will find people ready to take what you have, if you have it to offer. But it is the idea of the average business man, that the only way to get an enterprise through is to back it up with money. We have an awful reputation in this country—that all of our officials are "grafters" who are reaching out for what they are not entitled to.

A. L. Converse, Springfield, Ill.

Now, there are some lines along which it is not good policy to joke, and if we do want to do a little joking on these doubtful subjects, it is always well to explain ourselves before we get through, because it is not everyone who can see through a joke. I was not talking about the report, or even making any reflections upon it,but simply wanted it understood that the Legislature of Illinois is composed of gentlemen and rascals, and that the majority of them are honest; and ten good, honest, upright men in that Legislature can take hold of honest legislation and put it through regardless of the rascals—now, that is true. (Applause.) But some people, having had no experience in that line, seem to think that they must first be approached with money or something to give. Now, that is all wrong. It is not the right way to go about it. We have something here that is not a "white elephant." And when a man shows he has something requiring patriotism, even without money or other consideration, he will find representatives of his State who will fall over each other to meet that requirement. (Applause.)

Illinois University Clay School Scholarship.

President Stipes: Prof. Rolfe, do you want a committee appointed to look after this free scholarship?

Professor Rolfe: Mr. Chairman, the Board of Trustees of the University have offered a scholarship for each county. They said that these scholarships should be awarded on the nomination of the Association. It was called to my attention the other day that it had been left undecided as to what that meant. The Registrar of the University asked me if that meant that any member of the Association might nominate anybody he choose, or if it meant that it should be the work of the Association —the official work of the Association. It seems to me that your Association should take action empowering some one, or some committee of more than one—it would be better, perhaps, to impower some *one*, as it would occasion less trouble—to make these nominations to the Registrar; or if any member of the Association has a nominee in mind, let his send the name to some one here who will make the nomination officially to the Registrar..

This is a suggestion only on my part, fix it up any way you please, empower some person or persons to make this nomination to the Registrar of the University, so he may know the name comes to him authorized and that the person is one that the clayworkers of Illinois would be glad to have this free scholarship.

W. D. Gates: I nominate Mr. Stipes as the one to act for the Association in that regard. He is right here in Champaign and can attend to the business easily.

Mr. T. A. Randall, Indianapolis: I second the nomination and would suggest that the secretary put the motion.

Dr. Converse: I believe there would be a little objection to that motion. It occurred to me that we have representatives from most all the counties in this assembly this afternoon, and I believe the law has provided that these candidates should be named upon the recommendation of the Clayworkers Association. Now, it seems to me that if we delegate the membership of the Association to each county,—whether one or more,—to nominate from that county, it could be much more intelligently done. For instance, I think if Mr. Stipes is simply authorized to make the nomination, could he possibly do for Sangamon County as well as some one familiar with the young men of that county and those who would like or desire to avail themselves of this opportunity? and what will hold good as to Sangamon County is true of any other county.

Now, it seems to me that a motion should be made in this way: that a member of this Association from each county be appointed, and that those members shall be authorized to nominate, in the name of this Association, candidates who will avail themselves of this offer. Thus we will get at the interior, and it will give us an opportunity of getting good and eligible young men for this purpose.

W. D. Gates: An objection I can see to the Doctor's suggestion is that we have not members from every county in the State, and Mr. Stipes can readily put himself in communication with members from that section and inform himself. I had no idea of having nominations made indiscriminately. If some one from an outlying county or from any county desires to be informed of the qualifications necessary he could communicate with Mr. Stipes.

Professor Rolfe: I am not in anyway opposed to the Doctor's motion, excepting as to the practical working of his plan. The Registrar of the University is not familiar with the members of the Clayworkers' Association throughout the State. If a party from Kendall county, for instance, should write him that he was a member of the Clayworkers' Association, the Registrar would hardly know whether that was an authentic communication or not.

My own idea of this is that if some man were appointed, or men, and given authority to make recommendations to the Registrar, and let the other people make their recommendations to them. Now, if you should appoint one, two, three or half a dozen men here to take charge of this matter, and Mr. "K" of Kendall county should write them here, they would at once know whether Mr. "K" had the authority to do that, whether he was a reliable man and whether the nomination ought to be taken.

It seems to me, then, that under the provision of which the Doctor has spoken already, this is the most advisable plan, to have the men of your Association whom you have chosen to have this matter in charge, receive recommendations from the members in different portions of the State, and have them make the nomination over to the Registrar.

Mr. Randall: I think that this is a very proper matter to go before the advisory board, consisting of Mr. Gates, Mr. Butterworth and Mr. Stipes and others, and I believe that this is one of the duties which partly devolve upon just such a board, and I move as a substitute to Mr. Gates' motion, that the advisory board act upon these applications for scholarship.

Mr. Hammerschmidt: I move that the Secretary and President of this Association look after this matter and that these nominations go to them, I think that is the way to have it.

Mr. Gates: I would consent to the substitute if the men who are on this advisory board cannot get together and act together in this matter, then the President and Secretary are best informed as to the members of this Association.

Dr. Converse: This is probably one of the most important measures to come before us at the convention. I think there is merit in all these propositions and I therefore suggest that we have a committee of three appointed to draft a suitable resolution to cover this matter and present it tomorrow. I think that will be the best way. We will then have an opportunity to get this thing in shape. I move a committee of three be appointed to report tomorrow afternoon at half-past three.

Motion seconded and carried.

President Stipes: A little while ago Bro. Gates reminded me that I had a letter on my desk from the Street Railway Company and I should have read it at the start. It is from the Street Railway Company of Champaign, and says, "Dear Mr. Stipes: The Street Railway Company wishes to extend the courtesies of the city cars to the clayworkers while in our city. If you will kindly send us a badge such as they will wear on this occasion, we will be glad to give the conductors proper instructions." The letter is signed by Mr. H. G. Pepper, General Superintendent. Now gentlemen, all you have to do is to get on the street cars and ride. (Laughter and applause.)

Mr. Stoll: You haven't a communication like that from the hotel, have you? (Laughter.)

On motion of Mr. Butterworth, a vote of thanks was extended the street car company.

B. F. Roberts, Des Moines, Ia.: I was just asking Prof. Rolfe if the University is going to have a course for the young fellows that tend the furnaces, of say, three or four weeks, where they could learn to make simple tests, and he says they are willing to do that, if the men of this Association want it done, and I would like very much to have it discussed.

President Stipes: This is something which you all ought to be interested in.

Mr. Mamer: I think something of that kind would be very interesting and I think everyone who had the time would be glad to take advantage of an opportunity of that kind, and I for one would be heartily in favor of it.

D. O. Loy: I am not able to say just what I should do along that line, but I would like to have advice as to what can be done. I have been working in clay all my life and I have lost a good location before now, when I was hunting for a site by not knowing clay from shale. I think a school of this kind would be a very good thing indeed. I want my grandchildren to continue along the line that I am in. I want them to be clayworkers and I want them to be able not to make the mistakes which I have made.

Mr. Roberts: I am a practical man, a mechanic and a brickmaker, and yet I would like to go to the University and spend these weeks watching the manipulation of the mechanical and scientific instruments, taking the temperatures and watch the action of the clays in the furnaces. I haven't the time to spend four years in the University and I don't want to wait until my boys are big enough to come, and consequently the little fellows are going to be handicapped unless they can get a little knowledge of this sort in this way.

Professor Rolfe: I may say that such a thing as has been proposed here is going on among the farmers now at the University. Just exactly this same thing. A few weeks school is in progress among the farmers. The farmers' boys are asking to come and spend two weeks and the exercises are in progress now, that are believed to be within the reach of these boys. These exercises are arranged so that they will be of some benefit, and of practical use to these boys and a good many of the older men have benefitted. The younger men come with the idea of taking just the two weeks' course and very often they see there really is something for them in it, and they come back and take a longer course. A great many of them cannot do that and they get a great deal of benefit out of two weeks' instruction that is offered every year. I do not know whether you people want this or not, but if you do want it I do not see that there will be anything in the way of starting such a course as soon as we get the school started.

Dr. Converse: This proposition which has come up, is one of the most practical of anything which we have had, and I think it ought to be referred to the same committee to introduce a resolution along that line. The fact of that matter is, we ought to have a Committee on Resolutions, and by the time we get these things sifted down we can act upon them intelligently. We ought to avail ourselves of this opportunity which has been presented, and I move that this be referred to that same committee to be appointed by the President.

Motion seconded and carried.

Mr. Butterworth: The suggestion has come to me that it might be a good idea to hold this school at the same time that the Illinois Clayworkers Convention meets, so that it could all be done at the same time.

President Stipes: I believe this is a very good time to appoint that committee, and I will appoint Dr. Converse, Prof. Rolfe and Mr. Hammerschmidt. I notice on the program for discussion here, "Tile Drainage and its Benefits." We ought to get something out of that, and also the second question, "Which is the Better, Deep or Shallow Drains?"

Tile Drainage.

Mr. Mamer: I do not know that there is a great deal to be said on this question here. The ground has been gone over so often, that it is a sort of a rehash, but I think there is one thing certain that when it comes to deciding as to deep or shallow drains, it depends on the kind of a soil, or the fall you have, and the locality you are in. A statement that will suit all conditions is as impossible as it is to make a statement that will effect all the action of the various clayworking plants of the State.

Mr. George E. Beardsley, Champaign, Ill.: Is the question now before the house tile drainage, and is it a free for all, or is it just for some special speakers?

President Stipes: The question is open for general discussion, Mr. Beardsley.

Mr. Beardsley: I spent some time in the tile business, and it seems to me if I were to speak to one who knew nothing of tiles I could convince him in about three minutes it is a very important thing for a farmer to have about, and I would only have to relate one incident in my business. I sold to a man who lived eleven miles away from here some tile. He wanted to put them in, but couldn't pay for them on the next spring. We put them in in April. They had been in one year, when he came in the next spring to pay for his tile, after he had had one year's crop from his land after the putting in of those tile. He paid his bill, and I said, "Do you think it has paid you?" "Paid me?" he said; "Mr. Beardsley, if I were compelled to go and dig them up and haul them away after having used them one year, I have gotten enough out of the use of those tile to pay me for hauling them all back again and replacing them." Of course that would not apply to all kinds of ground—you couldn't say that of every piece of land. This was a flat, wet land, on which you could raise nothing of any account until after it had been drained by the tile; but he raised sufficient, enough and more than enough to pay him had he been compelled to dig them all up and replace them in his ground again.

It surprised me when I saw that question on the program for discussion, "Drainage and Its Benefits," I had supposed that that thing had long been "out-lawed," that it was no longer worth while to discuss that proposition; and even now, after discussing the question, I mistrust that I may not have heard right, and I may have been talking on the wrong subject all the while. It would not have hurt my feelings if you had asked me to sit down. I would have done so, feeling like the boy in the school whom the teacher was licking for the misdemeanor of throwing paper wads—it's a story I heard John B. Gough relate as a diversion once when his pathos had moved two ladies in the front row to almost audible weeping, and he thought he had gone far enough and he started in on his story as natural as though it were on the program, and maybe it was. A boy in school had snipped a wad of paper and hit the master in the face, just as we used to do sometimes when we were boys, and the teacher turned around and called the boy up on the platform and went at him. The boy laughed and laughed, and the teacher said, "I will show you how to laugh at me," and the boy replied, "I can't help it teacher, I have to laugh. You are whipping the wrong boy, the other fellow did it." If I did not hit the right subject, it is because of my lack of hearing; but honestly, I did not suppose that this question would ever come up for discussion. (Applause.)

President Stipes: Mr. Wheat, I believe you are an advocate of shallow drains.

Mr. A. J. Wheat, Emmetsburg, Iowa: I do not know anything about the business. I am absolutely a learner in the business. I had some discussion with Mr. Hartwell sometime ago about what I thought was the method that must be used in draining some of our shallow ponds. I am just down here among the "wise men of the East" to learn something of tile drainage. The men down in our State who have been teaching us to drain are the men who have come from Illinois, and they are buying our flat lands for $40.00 to $60.00 an acre and making them worth $100. We are just beginning to do what you have been doing for some time. We have two or three feet of black soil, and under that, hard-pan, as the telephone men call it, which is impervious to water, or seems to be. Now, if the tile is laid underneath this hard-pan, say at a depth of four or five feet, as soon as the soil is repacked in the ditch, we might as well have no drainage there at all; unless, as some have done, we put in wells; and a well will drain a limited area. I would like to ask the question if there is any other known way of draining under these conditions—than the use of wells?

J. M. Mamer, Campus, Ill.

Mr. Mamer: I would offer the suggestion that instead of putting in these wells, I would go deeper and I would go to work and run laterals out from my mains and get at it in that way. I believe they would get better results. I do not know of anything of that kind in this State.

Mr. Wheat: The ponds are not very deep. The reason our tile have been laid so deep, they were tile that would not stand the frost. If they would freeze while soaked full of water, they would break down, and they were tile that it was claimed would stand any amount of freezing. That suggestion about running the laterals out from the main. How would you get the laterals down to the main. I hadn't thought about that. Remember, I don't know very much about tiling. There has been a great deal of tiling done in some places, and some farmers have decided that because the surface ponds have not been drained, they think they cannot drain that sort of ground.

J. M. Mamer: I remember the case of a neighbor of ours about twenty years ago, in our county, who had laid a string of tile in a pond, about 36 inches deep. He went out one day after a big rain, and found a low place where this water had not run through, just as if there had not been any tile. He got a spade and waded out into the water about six inches deep, and he pushed his spade down in a number of places and in a few hours the water was all gone. It seemed that the water had run in there and a cake had been formed and this was the only case I ever heard of. We have a tract of hard-pan up in one of our districts and they never laid their tile over 20 to 24 inches deep. They found the first year the tile did little or no good, and the second year it worked better, and the third still better, and they claim in some cases it did not work as it should until five or six years ago. I do not know the exact conditions of that soil that Mr. Wheat calls hard-pan, but it may be something along that line, and it may be worth his while to watch it. Put in a string of tile, and if it does not work very well the first year, it may work better the next.

Mr. Ross C. Purdy, Champaign: I want to make a suggestion. Mr. Bain who was formerly with the Iowa State Geological Survey, is with us, and he can probably give us some suggestions as to what this hard-pan is, and what lies beneath it.

Mr. H. Foster Bain: It seems that what is ordinarily called hard-pan is simply clay. You will hear people call all sorts of things hard-pan. It is clay that has settled down and settled so closely that it is impervious, and has to be broken up as the man did with the spade. It is possible that it would break up in time anyway; that is, when you put in your tile, and not get the effect the first year, but in a series of years these particles separate so as to let the water through. I think it would be better to treat the clay in some chemical way; there are some things that you can put on the ground that will have the effect of pushing the particles apart. I do not know how you would go at it, but I would suggest that you ask the Agricultural Experiment Station.

Mr. Hammerschmidt: I would suggest that he put his tile down deep, and then occasionally fill the ditch with cobble stone, and in from one to five years, he will find it will all be loose and the water will go down.

Mr. Loy: I am almost afraid to say anything for fear some of my friends here will think I am trying to advertise my business, but I would be willing to ship a carload of tile to Iowa under guarantee that it will last fifty years and in that way create a fund that I might spend when I celebrate my golden wedding. Tile properly burned, whether placed one foot or thirty feet deep will not freeze, and will last a thousand years without crumbling. (Applause.)

Dr. Converse: A gentleman came into my office a few years ago and was very enthusiastic over some land in Missouri that could be bought for a song almost, and from his description of it, we thought the land would be a valuable investment, but we wisely concluded to send someone down to make an investigation, and the result was that we found that it was hard-pan, and that the soil had very little soil about it. It made fairly good pasture land, but it did not occur to any of us that the land would be really valuable, and so convinced were we of that that we concluded it was not what we wanted at any price. I do not think that that kind of land will be improved by anything but surface drains. If I had anything like that which I was using for pasture, I would put in surface drains. I do not think any land is worth draining that is not sufficiently porous to carry the water down easily.

President Stipes: I think the University of Illinois has been making some experiments of that kind down in the southern part of the State. Prof. Rolfe, do you know anything about the experiments the University has been carrying on in the hard-pan region.

Prof. Rolfe: I know the general results. I believe that any land can be successfully tiled. Hard-pan is a much abused word. It is only one of a dozen different things, and the hard-pan of one section is not the hard-pan of another, but I judge that the hard-pan being talked about here is an exceedingly close clay, so fine grained that the particles pack together so closely that the water cannot get through. I think this is the kind of hard-pan being talked about, and the kind that is being experimented with in the Southern part of the State. It is found that the tile will make that clay porous after a time. At first, the tile will not drain for more than three or four feet on each side of the the tile, and it is found that it will draw from a wider area each year. The University found they could locate these tile by going across the field by the appearance of the soil. At some places in this field, a man cannot walk across it without almost being mired in the clay. It is found that over the places where the tile are laid a man can walk on top of the ground and does not sink down. I was talking to the man who had this experiment in charge and he said he found these places grew wider and wider. He says he thinks the time will come when they will draw from a considerable distance on either side. I have drained ponds like that to which the gentleman has referred in the last few years. Put the tile down underneath this hard-pan, and you will see no effects from it the first year, but as the years go on, you will find that the tile will draw from a wider and wider area. If I had such a pond, I would put in the main tile and then I would run a good many laterals in the small area of the pond, and I think I would find in the course of a few years that the pond would be drained completely.

When the glaciers left this part of the country, there was left a basin or a depression in which the water stood; the slope into that basin was very gradual, and as the water fell on the clay on the either side it would run toward the basin. With a very slight velocity, it was able to pick up the finer particles of clay and carry them down in the basin. They staid there and formed an almost impervious bottom and it is that impervious bottom which we must break up, and I believe the tile will do it in a few years in almost every case. (Applause.)

Mr. Wheat: You have answered my question very well, and I will ask another. Certain experiments are being proposed for the reduction of the water level in the alkali land and a part of the Bad Lands of the Dakotas. At least I have heard that such a thing is to be done. Now whether there are any lands of this kind that need to be drained, I do not know. The theory is that by reducing the water level so that the alkalis do not crop out and will be finally carried away, until the land will be suitable for cultivation. In this alkali region there are spots that are very fertile. The question is now whether you care to discuss this or not.

H. E. Shaw, Bement, Ill.: We have had some of these small alkali spots in this State, I know from experience. I began using some tile long ago, and my friend Loy here was making tile when these spots were visible ten or twelve years ago, but since then I do not believe they have been found. They have completely disappeared. Of course they were not extensive like they are in the Dakotas or in Missouri. So far as draining the Iowa ponds is concerned, I have some very strong doubts myself. Down near Strasburg there is a small garden that is covered with water, and I asked the old gentleman who owned it, why he did not put some tile in, and he said, "There are five strings of tile in that garden put in six or seven years ago, and the water is still standing there." This territory has a good outlet, and it was due to the imperviousness of the soil. I was down in Arkansas hunting and the water we had to drink was surface water that was formed along in territory has a good outlet, and it was very brackish. I knew nothing about hard-pan, and I decided to dig a well, and when our native guide got back one evening I was digging the well and I had got down about two feet. I asked him how far it was down through that hard-pan and he said fourteen or sixteen feet. The hole did not fill up. I had begun to dig within a few feet of a little branch, and that well did not fill up until we had a rain and the ditch overflowed and filled the well with water. This was ten of fifteen years ago. The soil had become impervious and it was of such a fine, close-grained nature that I do not think you can ever drain it in any other way than by surface drainage. The gentleman from Iowa will find that he had better put in surface drains if he wants to use this land and get enough out of it to pay off the mortgage In the Southern part of the State you will find the people know as much about tiling as we do, but they put in surface drains and have a system of surface drainage which works very well. Of course conditions vary. What would be good in one place would not be good in another.

There is one matter on the program, which I should liked to have heard discussed, and that is the matter of deep or shallow drains. I bought a piece of land of 640 acres, and the man who had it in charge for the last five or six years had not tiled it, and his average crop was 45 bushels per acre. When I came into possession of it, I drained it thoroughly, and the average crop this year was about 82½ bushels to the acre, on the same land. I used large tile and plenty of them. I almost doubled the crop in one year, I do not know what it will be next year. My outlet was put in about five feet deep, and my laterals about four feet deep. My experience is that the deep drains in this soil pays the best.

Dr. Converse: I do not believe there is any man who believes more in tiling than I do. I have done a great deal and am going to do a great deal more, but there are some lands that will not be drained. In ground where the hard-pan comes up so high that you cannot bore through it with an auger, there is no need to try to drain it. I am going to give you a little bit of experience I had. Last July and August I was in Holland, which as you know is very flat. It is reclaimed from the bottom of the sea. They have their dikes now and are pumping the water out all over Holland. It is covered with surface drains that are sometimes 100 feet broad, and I tell you, gentlemen, I never saw such productive land in my life. A good deal of it was grazing land and I never saw such cows. They certainly could not have underground drainage. I did not see a sign of any tile. I saw tile on their houses. These Holland Dutch are the most enterprising people in the world, we cannot beat them on anything so far as agriculture is concerned. I do not know how far down they went, but it looked to me like the ground was saturated with water.

Mr. Hammerschmidt: Don't they have a subsoil?

Dr. Converse: The ground was full of water. The subsoil may have been sand, but if it is, why don't the water go down?

President Stipes: If there is nothing further on this subject it will be in order to adjourn.

Mr. Purdy: I wanted to announce that we had arranged for a paper on the Producer Gas question. The gentleman is not quite through with his experiments and asked to be excused this year. There is a gentleman who has been delivering lectures at the University on the Producer Gas question, a friend of mine, and I have asked him if he would appear before this Association and give us the benefit of his experiments and he has consented to do so. The gentleman is Mr. S. S. Wyer, of Columbus, and he has made this one of his special studies. He is now organizing a company of engineers to promote the producer gas furnaces. He has written books on this subject and is now delivering a course of five lectures at the University and has consented to come to us tomorrow afternoon at two o'clock and give us a stereopticon lecture.

Dr. Converse: Before we adjourn, I want to say to you that I understand that tomorrow night there is to be a banquet, and we want to give up all our serious talk before that time and have a jolly good time at the banquet. If any of you can make a good speech or tell a good story or know a good fellow who can, I wish you would let me know.

Mr. Randall: I wish in that connection, Doctor, you would make a mental reservation to draw on "new blood" and leave the old timers out.

President Stipes: Someone wanted to know this afternoon if I had a letter from the hotel. I want to announce that the Hotel Beardsley is giving this banquet tomorrow night to the Clayworkers' Association. (Applause.)

On motion of Mr. Hammerschmidt the convention adjourned until Wednesday morning.

SECOND SESSION.

Wednesday Morning, January 24, 1906.

President Stipes: The convention will come to order. The Secretary tells me we just lack one of having the largest number enrolled we ever had. If anyone in the room has not registered, they will please come forward. One of the first things this morning will be the appointment of the Resolution Committee. I will appoint on that Committee, J. M. Mamer, Campus, Ill., H. deJoannis, Chicago, and H. E. Shaw, Bement. The first number on the program is a paper by Mr. Ross C. Purdy on "Observations and Notes Gleaned on Visits among the Clayworkers of Illinois."

OBSERVATIONS AND NOTES GLEANED FROM VISITS AMONG THE CLAYWORKERS OF ILLINOIS.

By Ross C. Purdy.

Gentlemen of the Convention:

One of the most gratifying features of my visit among the clayworkers of Illinois was the hearty cordiality toward the Ceramic department of our University and the State Geological Survey. Fortunate is it that the clayworkers of this state are unanimous in their support and encouragement of these two institutions. Credit is given this Association for taking the initiative in the organization of forces for, and effort toward the passage of the bills making these two organizations possible.

Fully awake are the large majority to what has been and what can be accomplished in a volunteer organization of this character. Yet I found a few who do not realize the benefits to be derived by affiliation with this Association. They fail to see that the inspiration for the larger part of the technical advancement in their own field was originated and fostered by such organization. That it is in Associations of this character that the greatest and most beneficial movements in our own line have been cradled cannot be denied. "What benefits can I derive from being a member of the Illinois Clayworkers' Association?" was not an infrequent question. I answered that the Association would not have existed and cannot continue to exist without a membership and that the more substantially it is supported the greater will be its efficiency. It should not be a question of what the individuals are going to receive by being associated with us this year or next year, but it should be rather a question of whether it is not a duty to share the burden and aid the cause the fruits of which are so evident in the impetus given to technical progress in schools, technical commissions and surveys.

A few have argued that their processes and products have been developed to their present high degree of excellence without the direct aid from associations or schools and cannot see but what they have received but little if any help from them. Granting that there are individuals who have not been *directly* aided, let us consider the question in a larger sense.

Inventions of machinery and discovery of ceramic compositions were made when pure science was in its infancy. They were not so much a result of a general scientific enlightenment, but rather of individual inspiration of creative minds that pursued investigations doggedly and made discoveries after repeated failures, troubles and disappointments. Here and there in the past there are men whose achievements stand out brilliantly against those of the lesser inspired or less able ones in the craft, whose greatest ability was evidenced in the success with which they stole and applied the fruits of their more brilliant fellow craftsman.

R. C. Purdy, Champaign, Ill.

The development of pure science in the early days was made possible only by independent investigators who published freely the results of their researches. From these studies recorded and correlated, broad laws were formulated and truths established from which we today have our highly developed sciences of Geology, Chemistry, Physics, etc. If our earlier clay manufacturers had not so jealously guarded their discoveries, and had the knowledge they acquired been disseminated otherwise than through the dishonesty of their unscrupulous competitors there is no telling to what degree of perfection ceramic technology might have attained.

In the domain of pure science, schools were founded upon the results of the researches of the few, isolated but broad-minded discoverers whose results are thus made of almost infinite value and extent. In the domain of ceramic technology the secretive and jealous discoverers slowly multiplied because of the pure science being thus more broadly disseminated, yet they did not and could not found broad ceramic laws or principles until they banded together, exchanged experiences and correlated their several achievements. Earlier an apprentice began where his predecessor began, covering the same ground. The time has now dawned, however, when he will we able to profit to a large extent from what has been accomplished by others and forge ahead.

It is evident that as means for scientific ceramic education are multiplied the more rapidly will we advance. Associations are a very potent factor as educational institutions. We cannot progress by jealously guarding our individual discoveries, and by enforcing strictly the "No Admittance" edict so necessary nowadays to preserve factory discipline. Exchange of views are of great aid to the individual and a most important factor in the general advancement of science. All should willingly support institutions which stand for scientific advancement. As citizens, we are all compelled to support our University, yet how does our University benefit the day laborer, carpenter, mason, merchant, etc., who are compelled to help in its maintenance? That need not be answered, but let it be said that every ceramic worker is in as large degree duty-bound to support these institutions that stand for the upbuilding of his craft as is the citizen to support these institutions of learning that stand for the upbuilding of good, intelligent citizenship. Membership in this Association will be of advantage to the individual and a strength to our ceramic institutions of learning.

The qualifiation and training of the superintendents and managers of our various ceramic industries is a study that was made in view of a guide in the preparation of a ceramic curriculum. Erstwhile bookkeepers, machinists, carpenters, contractors, doctors, lawyers and most anything other than a college graduate is to be found at the working head of our factories. As a rule, however, machinists are in the majority as superintendents.

Many of our ceramic industries are dependent so much more largely upon mechanical processes than upon chemical, that it requires a mechanic to supervise their operations. In the brick industry the pure sciences aid in the selection of the material and in the economizing and controlling the burning, but beyond this it must be frankly stated that the pure sciences enter but very little into consideration. In terra cotta, pottery, glass and cement industries, the case is very different. There the superintendent should be equally as well trained in pure sciences and mechanics.

Our ceramic school should not and cannot with justice to the broader development of ceramic technology, confine its whole endeavor to preparing her graduates to become superintendents. They must necessarily train a few men for the more theoretical work which leads us on to greater possibilities in even our more simple industries. The majority of our students, on the other hand, will in time become foremen, superintendents and managers. But whether the future work of the graduate shall be along theoretical or practical lines, the same fundamental training must be given to both. Therefore it was demonstrated to my satisfaction that our course of study should be designed to develop both the mechanical and scientific phases of ceramic education. Particularly should the cement course be strong in mechanical engineering, for the cement manufacturers find that as superintendents they must have men whose training has been in the mechanics, though they cannot for a day dispense with the services of a chemist.

Technical ceramic schools in this country are yet too young and too few in number to have many trained ceramists in the field. The few, twenty or less, who can claim to have received a full ceramic training in our ceramic schools are "making good" and rising rapidly to positions that carry honor and responsibility. But when it is considered that there are about 500 ceramic industries in Illinois alone, it is readily seen why our graduates are not more in evidence. A glance at the transactions of our technical societies will reveal the valuable work these graduates are doing, and their desire to impart to others the results of their labors.

In studying the industries of this state, I was impressed with the need of a better understanding of the geology of clays. Geological history of clays is useful, but in the correlation, the tracing and identification of deposits, is the thing our clayworkers should understand more fully. I noted that we have a few factories so located that the winning of their clay. is too expensive and is growing more so as they work back into the bank. A better knowledge, before the erection of a plant, of the geological formation, the dip and the horizontal variation in strata would have caused less embarrassment today. To invest $60,000 in a plant on a deposit of shale which, due to what is known in geology as a fault, will vary abruptly from a good paving brick shale to one that is practically worthless for the purpose, is slapping science in the face. A trifle spent in properly inspecting the proposed site by a geologist or a ceramic technist would seem to be as wise as paying a lawyer a fee to trace the title of the property.

In the general manufacturing processes many mooted questions as to the merits of this or that method were noted as being of very live interest. Research must be made on a large scale covering wide range of variation before a great many of these questions can be answered. At any particular plant these questions can be worked out for the particular clay at hand, but such evidence can only be judged as circumstantial when determining the general and fundamental principles involved. Individual companies are not inclined to work out these problems in a broad way, and the problems are too large for the individual. They must find their solutions in investigations carried on by Associations or Ceramic Schools.

Each of you know your several problems, and it is not necessary to enumerate them at this time.

In regard to kilns it can be said that all kinds are in the State. The continuous kiln with fixed fire and progressing ware has been and is being experimented with, and the continuous kiln with fixed ware and progressing fire is now in successful operation. Flue, doors, fire-pockets, walls of all kinds, kilns of all shapes and capacities are in use. After all this frenzied experiment and investment in kilns, we are not much nearer to the solution of the question of the most economical and efficient method of burning. To properly investigate this problem will require a large outlay of energy, time and money, but I believe the time is not far distant when we will have this most important question solved. The best methods of carrying on this work is a matter that ought to be considered by this association.

One of the most unique plants for the utilization of waste heat from burning and cooling kilns is about to be tried by the Macomb Pottery Company. The products of combustion from burning kilns and hot air from cooling kilns will be drawn under the boiler and then distributed through the factory for heating and drying purposes. This company's bold experiment will be of vital interest to every clayworker, and their results will be as anxiously looked forward to as were the results of the famous Fiske experiments in substituting electric power for hand labor in brick manufacture.

The question of the use of producer gas using waste heat from cooling kilns for combustion is a problem suggested by a visit to the Alton Vitrified Brick and Tile Co. There they are successfully using producer gas in a continuous kiln effecting a great economy in fuel. Preheated air is a requisite in the use of producer gas, and in waste heat we find the solution to that part of the problem. The question as to whether the waste heat can be more economically used in the dryer than in conjunction with producer gas is a question that needs to be solved. It is at least a possible means of effecting an economy in burning kilns on the unit type.

Many are the problems noted in my short visits among the clayworkers, but time will not permit me to enumerate or discuss them. That Illinois is doing, and will continue to do, her share in furthering the solutions of the problems confronting our ceramic technists is evident, and I look forward to a great technical advance in our industries in the near future. Illinois has large and varied industries, and is rapidly coming to the front as a clayworking State. Terre cotta, enamel brick, stoneware, art ware, paving brick, face brick, fire brick and fire-proofing sewer pipe, drain tile, cement and glass industries of Illinois are second to none, and the future will see white wares of all descriptions manufactured within our borders. (Applause.)

Discussion.

President Stipes: Mr. Blair, we will be glad to hear from you on this subject.

Mr. W. P. Blair, Terre Haute, Ind.: I had not thought of saying anything. I do not know that I could discuss that paper, am not competent to do so. I was impressed with this one thought, however, that in the main, pretty nearly all that we know about clay and clay burning we have learned largely by accident; and there are more things that we do know and are unable to account for, than there are of the things which we know and are able to account for. We know that by experience. We don't know why this is so or why that is so, but only know that it is so; and the suggestions along the line of scientific investigation with reference to the unsolved problems as well as the problems that are solved it seems to me are of the utmost importance to this business, and I was highly pleased with the suggestion of the Professor looking to the investigations along these lines.

Now, I have no doubt that it is the experience of every man here that at one time or another, that some time, some how, in some way, there has been produced and turned out on his plant an extraordinary burn of brick that was highly pleasing, highly satisfactory in quality and in the large percentage of high grade ware; and yet, with the results all there before us plain as the day, we were unable to tell how such results were produced. Now, I undertake to say that this is one of the duties, that is, one of the questions for the scientific schools, and that is what we pay our money for, and it is one of the cheapest bargains, one of the best expenditures of money that we ever make in any direction whatever. We want to know, in other words, "where we are at." We want information as to why this occurs, and why that occurs, and how to produce, without guess or hap-hazzard, this or that much desired result. How very few of us know very much about heating! How very few of us know very much about gravity! How many of us know how to control these things. How many perfect burns or even very nearly so have there been secured in the last year from the various kilns throughout the State of Illinois! Scarcely any. So, I cannot discuss the paper, Mr. Chairman; but I can only express my hearty sympathy with the valuable suggestions contained in the paper. That is all I have to say. (Applause.)

President Stipes: Is there any other gentlemen who would like to say a word on this paper? Mr. Gates, we will be glad to hear from you.

A. W. Gates, Monmouth, Ill.: I do not know that I can add anything to what Mr. Blair has said in regard to the suggestions of the paper. I do feel and have felt for a long time, however, that these questions are questions on which we need more technical education. We all know that it is almost impossible to obtain the services of a man who thoroughly understands the clayworking business, and it seems to me this is a step in the right direction, and one that should have been taken long ago.

Mr. J. M. Mamer: If it is not out of place, I would like to ask a few questions in regard to the heat that has been described as being used at Monmouth. If I understood it right, and said the heat from the kilns was used under the boilers and then passed on to the buildings.

Mr. Purdy: The plant is at Macomb. They draw the heat from the kiln by fan, the same as the brick industry does with the dryer, to the boiler, use all they want for the boiler, and the rest they use in the dryer room and to heat the buildings. It is the same plan that has been tried by the Chicago Fire Brick and Retort Company. I believe they have a representative here and I would like to hear that gentleman's experience.

Mr. George Deitrich, Chicago: Our company tried it, but it did not work. They could not damper the kilns tight enough. They had plenty of heat but could not make it work.

Mr. Purdy: As I understand it the trouble there was this: They could not damper the empty kilns, that is, the cold kilns, sufficiently so that they acted as dampers on the flues through which they were drawing hot air from the burning kilns. And in that way, they set back their burning kilns, and instead of burning in six or eight days they had to burn ten or twelve days, due to the cold kilns. If they could cut off the cold kilns, they would have heat enough from the burning kilns to run the boiler. It is a question of the proper manipulation of the dampers and kilns. I know this is a live question, this question of the proper utilization of waste heat. It has been suggested that producer gas could be used under the boilers and in the heating of plants. I understand we have a producer gas man here this morning, who has looked into this question somewhat, and undoubtedly he could give us some idea as to whether the waste heat from the cooling kilns could be used in the production of producer gas.

The Use of Producer Gas.

Mr. W. B. Chapman, New York: I do not know of any way in which the waste heat as it comes from the kilns can be used in making producer gas, but that is not the only thing it is good for. It can be used for steaming up or watersmoking the next kiln and used to good advantage when the kilns are arranged at least four of them together. We have recently taken the matter up with the National Fire Proofing Company at Perth Amboy, N. J. who, as you know, make terra cotta. They have four kilns a short distance apart which they propose to use as one large continuous kiln. Of the four kilns, one will be continually out of commission, being emptied and being filled. Of the other three in use, one of them will be cooling down, one will be firing, and the other one will be watersmoking. Now we take the cold air from out doors and pass it through the kiln that has been burned and is cooling, and in that way we warm up the cold air from outdoors which we use. That air is carried to the next kiln that is burning hardest, and there it is connected with the gases of the burning kiln. The third kiln takes the hot gases as they come from the kiln. That is the plan we have worked out there, and while they have not applied it yet, it is something they will no doubt do in the spring.

As to what has actually been done, as you know, is very meager indeed. Our opinion, our experience in the matter would lead us to reason along this line. As you take up the proposition of heating your kilns, the first thing you may ask is, "Who are the largest users of fuel in the world, who uses the most coal? And the answer comes, "The iron and steel people." To whom do we look for the generation of heat in the most economical manner? and the answer is the same. Almost without exception they all use producer gas. Hardly any are using oil, and just a few natural gas. Now the next question comes, "Can that producer gas be applied to your work here, brick work, or any of the clay work?" To my mind, it is merely a matter of experiment. We are now going into all kinds of lines, some of the lines we have tried have been much more difficult than clay. We recently had the matter up with a manufacturer of lime. He had used wood, and he did not know whether he could get heat enough, but he decided to try it, and we had to put in our installation at our own expense, and we asked for no pay until it was a "commercial success." These were the words used in our contract, and after four months' run, he gave us a duplicate contract for another one of his plants. He is now saving 30 per cent. of his fuel bills, and I see no reason why results fully as good could not be obtained in your particular line. It has been demonstrated beyond question that the gas itself does not discolor the ware and that is one of the important points. If you go into the matter, you will find there are two manufacturers of producer gas, one for use in engines, and does not take an engineer to make the gas. You will find for heating purposes which is entirely different, it requires an engineer, because the heating proposition is different, different kinds of business, different kinds of retorts, and for that line of people, you have got to take the proposition of heating, and I would be very glad to go into details with you and tell you what we have done along lines similar to your own, and give you what assurance I can that in your own line you will be able to accomplish results similar to what we are doing in other lines.

Mr. Randall: Mr. President, the discussion has drifted away from the question before you, that being Prof. Purdy's paper, and I want to bring you back to that just a moment. I believe it is well for you to consider the spirit of that paper, a paper which comes to you virtually from your educational organization, the University of Illinois. I feel after having attended these conventions for nearly twenty years that the Illinois Association is today virtually new born. You have a motive power, a source of inspiration that is going to do good work for this Association and the clayworkers of Illinois that the older members never dreamed of, and I think we may congratulate this Association on the outlook before it today in an educational way, and I feel you ought not lose sight of the situation. I feel the Illinois Clayworkers are to be congratulated on having Mr. Purdy here at the head of this ceramic school, and he comes a trained man from the Ohio School for Clayworkers, from which no man ever went who was not trained to hard work. No man can pass through Prof. Orton's schooling who is not capable of hard work. You are to be congratulated on having a man of skilled attainments, and I believe it means a new birth for the Association.

President Stipes: Mr. Purington, can we hear from you?

Mr. Purington: I do not know that anything more can be said. As a matter of course, going back to the producer gas question, this is a matter in which we are all interested, and I propose to have a little more talk with the gentlemen before I leave. In regard to the new school here, there is no question but that we all realize the good that Prof. Orton has done in Ohio, and I think we will get like results in Illinois.

Warren Ittner, Belleville, Ill.

J. H. Millsom: Mr. President, I don't know that I can say anything—only that I am glad that the school has been started, very glad. Being a young man in the clay business, I want information, and if we can get it over at the school, I am going to have it.

President Stipes: I understand that Mr. Lauer, of Chicago, who has the next paper will not be here until afternoon, so we will now hear Mr. Warren Ittner who has a paper on "Economy in Steam Power."

Mr. Warren Ittner, Belleville, Ill.: I want to say before I start that I am glad to be here. This is my first State Convention. I was on the program yesterday to follow Prof. Rolfe, and I was sorry for that. I was put off until today, and then the Secretary to encourage me, came around and told me we were going to have an expert engineer here from Chicago and got me scared again.

ECONOMY IN STEAM POWER.

Warren Ittner, Belleville, Illinois.

Mr. President and Gentlemen of Convention:

A discussion of this subject from the clayworkers' point of view must necessarily resolve itself into a discussion of the questions he will ask when contemplating the erection of a new plant or the remodeling of an old one, viz: What power shall I use and if steam, what style of boiler and engine will be best suited to my needs, everything considered, and how can this power be used to the best advantage?

In making his decision, if he would arrive at some approximation of success, he certainly must needs consider everything. Not the everything his experience has taught him concerning boilers and engines, valuable though this may be if his experience has been large, misleading it may be, if his acquaintance with steam and its appliances has been small. Not the everything of his engineer, whose views are apt to be biased from too close contact with the trials and vexations of his particular engine in favor of the seeemingly perfect and apparently unattended monster in the engine room of the local brewery. The engineers idea, to install a miniature of this cross compound condensing outfit, is all right in a way, but then he knows nothing of the figure the necessary knowledge and attention to operate it would cut in the cost account of a plant making say twenty thousand brick per day where the engineer is also boiler fireman, machinist, etc. Nor yet the everything of the expert, for skilled though he may be, he may not trouble himself to learn some of the most vital though obscure conditions affecting your choice of boiler and engine. However, the solution of such problems is his business and it is only fair to say that his advice would be best to follow.

That, everything considered, means a thorough threshing out or what everyone knows, a careful review of all the facts and conditions governing the case and what is not of the least importance in aiding us to a decision, a visit to plants operating under something like similar conditions. It would be difficult to explain why clayworkers as a rule look upon this subject with indifference if they give it any thought at all. It certainly is worthy of mature consideration. What method of power generation to install? If electricity, whether single or multiple units; if steam, whether elaborate economy or simple efficiency would best suit our purpose and then its arrangement in connection with the clay plant as a whole. All of these are certainly questions of paramount importance in plant construction.

The question of the best method of power generation for clayworking plants does not come within the scope of this discussion. It alone is a phase of plant construction of first importance. However, before dismissing it I wish to quote from the able and interesting paper, read before the Ontario Clay Product Manufacturers Association, at Hamilton, Ontario, by Mr. A. M. Wickens, chief engineer of the Canadian Casualty and Boiler Insurance Company. In reference to steam power versus all competitors, he says: "But where a man has heat to use or where a man has the opportunity to utilize heat I think it is a long way between now and the time the gas producer or electricity or coal oil or gasoline will beat steam. Just as soon as we begin to study the use of exhaust steam, if we are going to get back the heat we put into steam after we have run our engine, it is going to keep all the new ideas working very hard to beat us very much. Just as soon as we begin to study and work out properly utilization of the waste that we are making from our steam, just so long are we going to keep the other fellow hustling." And in my opinion he is correct in this. We must have steam or heat in one form or another about a brick plant, whether to dry brick or heat dies and if it is properly and economically generated and its heat energy used to the limit, there will be few if any of the newer methods of power generation be able to equal the result.

It would certainly be a pleasure to be able to formulate a table showing the type, horsepower, etc., of engines and boilers best to install in connection with clay manufacturing plants of various products and capacities. It may be that the impractical ones will be disappointed at not finding this data here. It is needless to say that they will look for such information in vain. All we can do, in fact all our technical books or universities can do, is to teach us how to make the best of the conditions that govern. It is for the solution of these problems that our engineers are trained. An eminent authority, in an article along these lines has this to say: "The adjustment of the ratio of expansion of the steam to the requirements of maximum efficiency is the vital problem of the designing engineer and the purchaser of the engine. The accuracy with which the designing and constructing engineer determines the adjustment for maximum financial efficiency is a measure of his ability and skill and a guage of his success in solving his problems. With each standard construction, experience usually enables the engineer to satisfactorily determine the proper solution of this problem."

It would be disappointing if, on account of feed water, or some other cause, we would have to reject an economical type of boiler in favor of one of lower efficiency but better adapted to the conditions. To be sure we can prepare most any kind of water for use in boilers but suppose this water purifying plant were beyond our means or expensive to operate, thus annulling the saving made by the more efficient boiler? However, the mistake in our profession is much more often made the other way around. Regardless of the price of fuel, boiler water, horse power required, and numerous other points of equal importance, we will install a steam power plant of the lowest efficiency and install it carelessly at that. Why? Well, it is the cheapest and simplest, we understand it best, anyone can operate it, we don't care about the looks as long as it does the work, etc., etc. At the same time there might be every reason for the most rigid economy; the most up to date steam plant, even though much more expensive, would pay a skilled engineer and a good interest on the investment by the saving it would effect. And saving, stopping the leaks is the order of the day in our business even to a much greater extent than in any other line of manufacture. One of our oldest clayworkers has said, "It is not what you make but what you save around a brickyard that counts." and there is nothing truer than this any way you take it.

Now as to the first part of my subject—what type of boiler and engine to install for plants of various size—aside from the particular conditions which would govern the selection, all we can do is to consider the various types. There are few instances where you will make a mistake by using some one of the standard makes of water tube, internally fired or multiple flue boilers. The primary idea is to use every heat unit contained in the coal you burn. In its development great strides have been made, however at certain sacrifice to cost of maintenance, strength, etc., but fuel must indeed be cheap to annul the saving thus effected. Indeed one of the accomplishments of the modern boiler is to burn cheaper or lower grade fuel. The coal mines of our State used to employ the common cylinder boilers or boilers with only two or three large flues. They were thought to be the only thing to use. Now our coal mines are installing the modern types because the mine operators have learned that they use less fuel, and steam can be kept up with the slack that formerly went over the dump. Certainly if where fuel is the cheapest it pays to install a high type of boiler it ought to pay everyone else to do the same.

Now as to engines, there is a much larger field for choice. You can get any kind of an engine you want, steam users, not to mention steam wasters and steam savers. The requirements of the plant still govern the choice; if we are going to need large quantities of steam for some purpose or rather such as drying wares, it would be a mistake to install a complete steam saving outfit. An efficient and less complicated engine will do and can make the saving by utilizing the exhaust steam. If, however, we want to develop power and will have no use for exhaust steam there should be no hesitancy in adopting the most economical outfit we can buy, consistent with the size of our plant, capital invested and the talent we can afford to employ to attend to its proper operation. Whatever type we adopt it should be properly attended by some one who knows what he is about, if not by a competent engineer. The second hand man, whose only accomplishment is a willingness to work cheap and put in all the overtime necessary to rectify the consequences of his bungling mistakes, belongs with second hand machinery—on the scrap heap. Good machinery with a competent man to operate it will pay dividends in any plant and if you cannot succeed by these means you cannot by any other.

The same writer from whose article I have already quoted, an eminent teacher of engineering, has this to say concerning the mechanical efficiency of engines and their adaptability to various industrial work: "Mechanical efficiency—the ratio of work transmitted from the piston to the point of useful application, ranges from 95 per cent. in direct acting engines as a maximum, to 85 per cent. with the older noncondensing engines it is made a maximum and friction reduced to a minimum by careful design and especially by securing constant, complete and free lubrication; usually, in the best cases, by a circulatory flow of oil flooding the bearings and returned by pumps to the source, through a filter, to be again distributed to the rubbing surfaces of the engine. The lost work is the less, as the pressures are higher within limits determined by the nature of the materials as the lubricant is better adapted to its intended purpose and as the flow is more liberal where reaching the rubbing parts. The highest values of the coefficient of friction are often ten and sometimes twenty times the lowest and the careful attention of the engineer to this detail is always well compensated."

"The utimate limit of economy in operation, with any class of engine, is fixed by financial considerations and the principle involved in determining the limit may be thus expressed:—That engine is most perfectly adapted to its place and purpose of which the type is such that no practical substitution will permit the supply of the demanded power at lower total operative costs, including interest on first cost, a sinking fund to provide for replacement at the end of its period of use and annual operating expense; and that size of engine is on the whole best, variation from which in the direction of either increased or lessened size will increase that total expense of operation. In the latter case, the gain by reduction of size will be more than compensated by the loss due to its reduced efficiency. The best engine is that which will give largest returns on the capital invested, adding most effectively during its life to the dividends obtainable from the plant of which it forms a part."

Reluctant as I am to leave the subject of engines and boilers for brick plants without having brought to light something of more definite importance, I will pass on and discuss a few of the abuses to which we see even excellent machinery subjected and which are sources of loss of power.

Overloading—working above capacity is one of the commonest abuses we see engines and boilers and machinery put to about brick plants. Where the economy lies in such proceedure it would be difficult to say. In fact such practice is the very opposite of economy. The average man, when he is running a boiler or engine or brick machine at 10 per cent. over its limit really believes he is gaining just that much. Arguments to the contrary seem not to reach him but sooner or later he will be brought to a realizing sense of the truth of that assertion, and the lesson is likely to be dearly bought for machines are just the same as men or beasts, they do the best work and last the longest when not strained or overworked.

When you install a steam power plant make it large enough and to spare. Allow for a large surplus of power. The chances are that your machinery will take more power to drive than you have counted on and then again I never knew a brickmaker that was not making some sort of an addition to his outfit that would take additional power to drive. If you have surplus power you can do these things while often you are balked in installing some really good labor saving device by want of power to operate it. But over and above these considerations a reasonable surplus of power is a good investment.

As to the other numerous ways in which we waste steam and power I am discouraged about discussing them, partly because Mr. Wickens in his recent paper from which I have already quoted and which you have doubtless read has covered them so completely and forcibly, so much better than I could do and partly from the fact that the subject has been threshed out so often before the various conventions that it is apt to become tiresome. About belting—it would seem that we ought to have learned by this time that a light narrow, belt stretched like a fiddle string to make it pull is poor practice. It increases friction to the extent of running journals hot, wasting power and lubricant and causes delays by breaking. Why not have them wide and heavy? The closer between the centers of pulleys the wider and heavier they should be. Have the bottom belt do the pulling and the top hang slack so it will hug the pulleys and give a longer arc of contact on the pulleys; this obviates use of a belt dressing to make them pull. Why run a twist or crossed belt when we can run them the proper way? A belt run with the bottom side pulling and the top side slack will out pull and out last three crossed belts.

Improper alignment and poor lubrication are two great wasters of power and causes of trouble. It would be safe to say that more power is lost through these two causes than all the others combined. It takes no small degree of engineering skill to properly align shafting and machinery and as for the lubrication problem that is notoriously unsatisfactory, especially where there is much dust. That so much power is lost by these two causes is no doubt due to the fact that they are not easy of detection; a journal run hot by a tight belt we can see and remedy but we cannot so readily see that they are not being properly fed with oil or that the shafting is binding in the journals from being out of line. To the eye they look all right and these conditions may exist for a long time before they are detected.

We meet our greatest power development and power transmission problems in remodeling an old plant. We are often hedged in by all but insurmountable problems. Often we find that, taking into consideration the expense we have been at, the more or less unsatisfactory result and the trouble we are sure to encounter in operation, it would have been cheaper and vastly more satisfactory to have built new. So it is that in making changes, repairing or remodeling, when we meet a difficulty it is well to remember that great and various improvements have been made in both power plants and power transmission appliances and we should not neglect to study the adaptability of each and every one of them toward overcoming our particular trouble. If one does not furnish a solution to the problem, another might, perhaps the one we least expect it of.

As to the matter of insulating steam pipes to prevent condensation which is caused by the radiation of the heat or life of the steam through the iron pipe—it is simply a question of whether we want to make this saving or not. The radiation of heat is perhaps the largest problem in connection with the clay burning and kiln construction; we pay due deference to it here. It certainly is an immense cause of trouble and waste in steam engineering yet we overlook it almost entirely. To cover steam pipes with an inch or two of magnesia felt covering is good practice. By doing this we furnish dryer steam to our engines, which both relieves them and increases their efficiency. We burn much less coal and use much less water. A battery of overworked boilers may be relieved and even given a considerable surplus of power by this covering.

It will pay every clayworker to remember that his calling has reached the point where the growing competition and trade conditions will not permit him to install anything but the best and most economical. Invention and progress relegates things to the scrap heap soon enough. You may have a market for a time in which any thing will do and in which any thing will sell but it will not last long and when competition comes you must be on an equal footing with the newcomers or give way. (Applause.)

Discussion.

President Stipes: Power is something we are all interested in. This is an excellent paper and should be liberally discussed. Dr. Converse what have you to say on this subject?

Best Engines for Brickyard Use.

Dr. Converse: I am not an expert on power. I remember a piece we used to have in our old reader at school which read, "Knowledge is power," and I expect that is about as true with a power plant on a brickyard, as anywhere else. I was interested in that paper. I thought the use of power was much better and clearer put than the source of power. The various modifications and adjustments, the shafting, belting, etc., was very clear and distinct. I thought when he took up the subject of pipes, etc., and assumed that the best engine for us was the one best adapted to our use, and the most economical, that he would tell us which engine was the most economical. He reminded me of a politician who was arguing to get votes, and some one said, "How do you vote on the Free School system." He said, "If it is a good thing, I am for it, and if it is not I am against it." I think friend Ittner's argument on engines was about all that way, and he did not tell what kind of engine is best suited for brickyards. I believe he made no statement as to whether high speed or low speed was the best. I know little about engines and I was in hopes I would get some information. There is a great deal to be said on firing engines, and the manufacturing of steam, and a great deal to be said on the different kinds of work. One class of engine may be better suited to one class of work than another. Two-thirds of that paper was admirable, and is just exactly what everybody ought to stop and consider, the proper use of belting, etc., and I am in hopes some one will bring out something more definite on the sort of power, and how to use it.

Mr. Ittner: The very point that the Doctor brings out, the best type of engine to use, is really a very difficult matter to make it absolutely definite. As I mentioned, I did not make a table showing the various types of horse power, speed, etc. The conditions under which we build a plant govern that, and the type of plant and the product you are going to turn out, and then there are so many conditions governing each that you could not duplicate it in any form. In engine building we have made great strides. They are building engines much more economical in the steam used, and the making of power, and it is universally recognized that the high speed engines within the limits are the best. You can go so far in speed that you increase the cost of maintenance and labor very much, and the point is just where to stop. Of course, as I have said, this is governed altogether by the conditions under which the engine is operated. Then there is the pressure of the engine. You will not find a high boiler pressure around a brick plant. The higher pressure you have, the more economical the engine. There are a number of devises by which we can increase the efficiency of the boilers, and these things have got to be worked out according to the plant you are remodeling or building. I do not recall the name of the gentleman, but it is the dean of the College of Engineering at Cornell, who says, "It is the engine from a financial standpoint which must govern the choice of the engine, and the best engine is that which will help to make the plant pay, and one that we cannot change or put in another type to better ourselves. The engine may be wasteful and use an immense amount of steam, but if we put in a higher type of engine we may have to employ experts or more help, and we would lose in the end, and the plant as a whole would not pay the dividends that it would pay with a lower grade engine." That is as close as he comes to it, and I guess I can be excused for not coming any closer.

Mr. H. E. Shaw: This brings to my mind some points that neither Mr. Ittner nor the Doctor brought out, and that is the size of the plant has much to do with the choice of the engines. A small plant could be run with 25 or 50 horse power, while a man with a large plant requiring 500 horse power would require a Corliss engine, or something very high in efficiency, but for a small plant an ordinary slide valve type engine would be sufficient. With a big plant where a large consumption of steam is made, using 500 or 1000 horse power, taking the percentage of heat escaping where the exhaust goes out into the atmosphere, it would mean a big saving. In regard to the types of engines, the High Speed and the Corliss. Of course, there are a great many different ideas. The high speed engine manufacturer will tell you his engine is as economical as the Corliss. Whereever I have had occasion to notice, in being interested in two electric light plants, one using an Ideal high speed engine, made in Springfield, and the other using a Corliss, the consumption of power is not materially different in the two places. I think one requires about an average of 50 horse power and the other about 60 horse power. The 60 horse power is using the high speed engine. I do not know under what conditions it is being run, but I know the fuel consumption of the high speed engine is just double that of the Corliss. This I know from practical experience. The boiler conditions are about the same, ordinary tubular boilers, 16 feet long. The Corliss type pays a dividend and the other has not, to my knowledge, for eight or ten years, and this is due very largely to the matter of power. Of course, the Ideal high speed engine may not be operating under ideal conditions, may be in bad repair, or something of that sort. If I were installing a large power equipment, where I could not use exhaust steam, I would use the Corliss engine.

Marion Blair, Chicago, Ill.

Mr. Ittner: I can corroborate that. We have two plants; at one, we have a 120 H. P. power slide valve engine, and at the other, a 190 H. P. Corliss, made in Ohio. The arrangement of the boilers is the same; the setting of the boiler of the Corliss is, perhaps, better. But the difference in the amount of coal used in these two engines is phenomenal. I have told my father I thought it would pay us to throw the slide valve engine on the scrap heap and put in a Corliss, and there is no doubt about it. There is nothing like the Corliss engine for saving steam; there is a larger margin, a larger limit in which you can regulate it, while with the slide valve engine you are limited. The valves can be changed more or less by the lengthening of the lever arms, but there are limits, and the difference, as I say, in the fuel consumption developing very nearly the same horse power for pulling about the same load at each plant; the slide valve pulls a little more, and I make allowances for that, but the difference in consumption of fuel is enormous. This winter I am speeding the slide valve engine up, putting in a new fly wheel and giving it, I think, about fifteen more revolutions and cutting down the steam, and covering the steam pipes about this one plant. I inspect the boilers practically every week, noting the amount of steam used, and I think when I get through I will be in fairly decent shape. Another thing is the small engine. The thing to do is to consider every type, but in my opinion, when you want to develop 40 or 50 horse power, there is nothing like the up-right engine. The horizontal engine is all right, but the up-right engine is the most economical, and don't take up much floor space. There is a machine shop which had been recently built in Belleville, a very modern shop, and they put in a Freeman internal fire boiler. I called them up a few days ago to ask how they were getting along, and they were well pleased with it. It is a very expensive boiler to buy. A man putting in a small brick plant might not be able to buy that boiler, but if he is paying a high price for fuel, he cannot afford not to buy some such type of boiler. He cuts down the floor space; the boiler takes for floor space only about 9 x 13 feet for a 150 H. P. boiler. We have about a 150 H. P. in our two boilers, that take up about 18 x 20 feet. They are running a 40 H. P. engine to run the shop, a 40 H. P. to operate an air compressor, and a 40 H. P. engine for the electric lights, and they are doing that with one boiler. They frequently run all three engines at one time. The average brick man would not consider that type of boiler; he would probably write the boiler people and get a price, and after getting it throw it in the waste basket and not consider it any further, but likely buy a second-hand boiler, probably a cylinder boiler, and pay a high price for his fuel, which will eat him up, while his competitor would put in a high type boiler and make a higher per cent. on his investment in the boiler and engine alone than the other man would make from his whole plant.

Mr. H. E. Shaw: Speaking about internal fire boilers, I have a friend who is in the coal mining business and has had some experience with the internal fire boiler. The Marine type boiler, is that what you refer to?

Mr. Ittner: No, it is a large boiler and has one large flue, in which the grate is situated, and one flue—the return flue for the stack, about six feet in diameter,—about ten or twelve feet long.

Mr. Shaw: Some three or four years ago it was a proper thing to have Marine type of boiler. My friend had two tubular type boilers. He bought a Marine type boiler—internal fire boiler—and I was down there one day and noticed that the boiler was leaking badly. I ask him what was the trouble with the boiler, and he said, "Hold your hand on the bottom." I did, and it was comfortably warm, while the top was as hot as any boiler. The trouble generally is, that you don't get the same heat on the bottom of your boiler as the top, and the result is, you have an unequal expansion and the boiler soon leaks, and my friend told me that a man could not run fast enough to give him an internal fire boiler. The boiler to which Mr. Ittner refers is probably not a Marine type boiler. I guess a man could get into about as much trouble by buying a Marine type boiler for use in a stationary plant as he would ever want. I was talking to an engineer of a Mississippi river boat, and he said the trouble was that you got more heat on the side and top than you did on the bottom, and he said this went on until it got leaks and had to have constant repairs. I think for the clayworker, the old type, horizontal, tubular boiler is as good a thing as you can get hold of.

Mr. Ittner: Mr. Shaw' is correct. What we term the Marine type boiler is being supplanted in modern service by the Babcock and Wilcox boiler, in which the tubes are directly exposed to the fire and the circulation of water is through the tubes, while the boiler proper simply carries a very small amount of water and holds the steam. These are supplanting the Marine type of boiler in modern service, for they have had a great deal of trouble with the Marine type on account of the contraction and expansion. I cited the case of the machine shop to illustrate my point. They have had no trouble so far with their boiler, but whether they will have any trouble is simply to be demonstrated by the flight of time.

Mr. Mamer: In regard to the Marine type of boiler and the water type boiler; I think the boiler Mr. Ittner spoke of comes nearest being the Continental type boiler. The difference in expansion and contraction is just as true with that type of boiler as it is with the Marine boiler, and the same result is very noticeable in the old cylinder boiler. With the boilers we use now that is not the case; the difference in temperature in the sides is pretty nearly as true of your tubular boiler as it is with the internal fire boiler. The Commonwealth Electric Co.'s big plant, built on 22nd street in Chicago, uses these internal furnace boilers with a corrugated furnace, and I guess this is the biggest steam power plant in the United States, or will be when completed. Mr. Thompson, a year or two ago, had a paper here and he spoke of this great plant. I think the properly constructed internal fire boiler is eventually the cheapest. It takes no setting, and the cost of the boiler, that is the internal furnace fire, with a corrugated furnace, as compared with the tubular boiler, will run about sixty to one hundred.

Mr. Stipes: The next number on the program is a paper by Prof. A. M. Talbot of the University of Illinois, on "Sewer Pipe, Its Properties and Requirements." Prof. Talbot is the Director of the Department of Theoretical and Applied Mechanics.

Prof. Talbot: Mr. President and Gentlemen of the Convention: I desire first to give the credit of the greater part of the work on this paper to Mr. Slocum, Instructor in Scientific Engineering at the University. The paper tells of the requirements of the finished products and of course I am not going into the methods connected with the manufacture of sewer pipe. I do not feel competent to discuss that part of the question.

SEWER PIPE: ITS PROPERTIES AND REQUIREMENTS.

By Arthur N. Talbot and Roy H. Slocum.

Mr. President and Gentlemen of the Convention:

Vitrified clay sewer pipe, by reason of its many excellent qaulities, is used extensively in sewer construction. It is easily and quickly laid even under adverse conditions. It resists the wear of the stream, is proof against chemical action, and because of its smoothness and its non-absorptive properties forms a sanitary channel. The manufacture of clay pipe by machinery dates from about 1810, and since that time many forms have been tried. Only the bell and spigot pattern will be treated in this paper.

Vitrified pipe ranges in size from an internal diameter of four inches for house connections to thirty and thirty-six inches for the larger sizes. The thickness must increase with the diameter of the pipe, since the larger size carries a greater load upon it and also because the greater span would require more thickness to carry even the same load. What the load formed by the back filling in the trench will be is difficult to judge, and the strength of sewer pipe under conditions it will be subject to in the trench is not well determined. Some experiments made by Frank A. Barbour, reported In the Journal of the Association of Engineering Societies, may throw some light on the breaking strength of such pipe. The tests were made by placing the pipe in a trough partially filled with earth, the pipe was covered with earth and the mass subjected to pressure by a hydraulic cylinder. Standard and double strength pipe were tested. The following formulas for breaking load and thickness of shell were deduced from the experiment:

$$P = c\,\frac{t^{1.65}}{d} \text{ or } t = 165\sqrt{\frac{Pd}{c}}$$

P is the pressure in pounds per lineal foot, t the thickness in inches, d the diameter in inches and c a constant equal to 33,000. The pressure in pounds per lineal foot carried by pipe and the value of P from the formula are compared in the following table:

	STANDARD.			DOUBLE-STRENGTH.		
Size, In.	Thickness, In.	Lbs. Lin. Ft., Actual.	P.	Thickness, In.	Lbs. Lin. Ft., Actual.	P.
6	0.69	2610	3010			
8	0.82	2900	2980			
10	0.83	2830	2440			
12	1.02	3230	2860	1.26	3920	4030
15	1.18	3210	2890	1.40	4560	3860
18	1.29	2680	2790	1.54	4150	3740
20	1.31	2580	2560	1.74	4120	4110
24	1.47	2550	2500	2.02	4330	4380

Some years ago experiments were made in the Laboratory of Applied Mechanics of the University of Illinois for the Department of Public Works of the city of Chicago. The pipe was placed on a sack of sand resting in a rounded base and a similar sack and rounded saddle were placed above the pipe. The pressure was thereby exerted on nearly two-thirds of the surface of the pipe, and all of this pressure was transmitted through the pipe. Seven makes of pipe were tested, the sizes being twelve and fifteen inches. The results indicated but little difference in breaking load for the different sizes, averaging about 1700 lb. per lineal foot. The range of strength was from 1100 lb. to 2400 lb.

These pipes were selected by a representative of the Department of Public Works to be average or representative specimens of sewer pipe of the different makes. Other pipe sent by the makers for testing broke at loads from 3000 to 4000 lb. per lineal foot. Eighteen-inch pipe selected from pipe furnished for the Champaign sewerage system broke at 3300 lb. per lineal foot.

Tests on twenty-four inch, twenty-seven inch, and thirty inch pipe (double strength) published in a manufacturers' catalogue give a strength of 8000 to 10,000 lb. per lineal foot. These results indicate an excellent quality of pipe, probably much stronger than ordinary pipe.

From an analytical study of the strength of pipe it might be concluded that the thickness of the pipe should vary directly as its diameter; in other words, that if the thickness of the pipe is made a given part of the diameter (as one-twelfth) the breaking load will be proportional to the diameter of the pipe; that is that if a 12-inch pipe one inch thick will stand 2000 lb. per lineal foot, a 24-inch, two inch thick should stand 4000 lb. per lineal foot. The tests quoted seem not to corroborate this conclusion, for the breaking loads are nearly independent of the diameter or span length. Mr. Barbour's formula assumes that the breaking load for a given thickness of pipe varies inversely as the diameter, and takes account of the discrepancy referred to above by using the thickness to the 1.65 power. The conclusion to be made from his formula is that if the load on the pipe remains proportional to the diameter, the thickness should increase more rapidly than directly as the diameter. To illustrate this, it would mean that if an 18-inch pipe should be one and one-half inches thick, a 36-inch pipe should for corresponding strength be three and one-half inches thick. It would be interesting to know whether this conclusion is a correct one.

It goes without saying that strength of pipe is not the only element entering into the control of thickness of pipe. Necessary thickness for forming and handling when green, changes in shape during burning, percentage of culls in product, loss in transportation, cost of transportation, and other items affect the problem. Competition with other materials may make it necessary to be satisfied with a smaller factor of safety for the larger sizes of pipe. It seems probable that in the ordinary run of pipe the margin of safety for the larger pipe is less than for the medium sizes.

Experiments made by Mr. Barbour indicate that as a trench is filled the proportion of the weight of the filling above a sewer pipe transmitted to the pipe rapidly decreases till a depth of five feet is reached and that beyond a depth of ten feet the proportion is practically constant. The form of trench, filling material, and kind of sheeting effect the value of this relation.

Assuming the corrrectness of Mr. Barbour's results, the following table gives the average per cent. of weight of filling bearing on the pipe and the weight per square foot vertically on a pipe at different depths in material weighing 100 pounds per cubic foot:

Depth of Filling, Ft	1	1.5	2	3	4	5	8	10	15	20	25	30
Per Ct. Wt. Carried by Pipe	80	72	65	54	48	44	40	38	37	37	37	37
Wt. per Sq. Ft. on Pipe	80	108	130	162	192	220	320	380	555	740	925	1110

Loam in unsheeted trenches runs lower and gravel in smooth vertical sheeted trenches runs more than the above given values.

In 1902 the committee on sewers, of the Illinois Society of Engineers and Surveyors, in their report quoted the following necessary estimation strength for depths up to 20 feet, with factor of safety of two: 12-inch. 7000 lb.; 18-inch, 10,000 lb.; 24-inch, 14,000 lb.; 30-inch, 19,000 lb. These loads are much higher than those given in the above table. Evidently, the actual load coming on a pipe is not well determined.

Probably many breaks in pipe sewers are caused by improper and insufficient bedding of the pipe and unequal settlement. A flexible joint would permit the pipes to settle with the bed and thus avoid many of the breaks due to settlement, but with a flexible joint the continuous grade, one of the requiremnets for a sewer, would be lost.

Again it seems from observations made on sewers in New Jersey, by Alexander Potter, that on the failure of one pipe the load is transmitted to the next and a spreading force given it until lengths as great as 150 feet have been found broken. Mr. Potter found that a 24-inch pipe had spread as much as one-half inch. This could not happen without throwing a high stress in the next pipe, besides giving it an additional load. He, however, found no breaks where the trench was back filled with quick sand. This probably is due to the fact that the sand ran under the pipe and gave it lateral support as well as allowing even settlements. The pipe may crack and not collapse.

Tests on resistance to internal hydraulic pressure made at the University of Illinois at the same time as the breaking tests previously quoted gave bursting pressures ranging from 32 to 155 lb. per sq. in., the average being about 80 lb. per sq. in. The amount of water absorbed by pieces of broken pipe in 24 hours ranged from 1.9 to 4.8 per cent., averaging about 3 per cent.

The pipes are usually joined with cement mortar and the effectiveness of the joint depends on the fullness of the joint and the adherence of the mortar to the spigot and bell. Strength and imperviousness are given the joint by depth and compactness of the mortar in the joint. The depth of the mortar depends on the depth of the hub and its compactness on the care of the workman and ample joint space in which to work. Recommended minimum depth of hub, joint space, and thickness of shell for different sizes of pipe follow:

Diameter, Inches	4	6	8	10	12	15	18	21	24	27	30	33	36
Depth of Hub, Inches	1¾	2	2½	2½	3	3	3	3	3	4	4	4½	5
Joint Space, Inches	⅜	⅜	⅜	⅜	½	½	½	½	⅝	¾	⅞	1	1
Thickness, Inches	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{15}{16}$	1	1⅛	1¼	1½	2	2⅛	2¼	2⅜	2½

The carrying capacity of a sewer depends on the hydraulic gradient (i. e., fall in feet per foot), the area of the water cross-section, the ratio of water cross-section area to wetted perimeter, and the roughness of the interior of the channel.

The gradient is limited only by what is available on the maximum allowable velocity. The area of the water cross-section may be that at the full depth of flow or any partial depth of flow, the ratio of area to wetted perimeter depends on the depth of flow and the form of cross-section of the sewer.

The roughness of the interior of the channel is that due to many minute projections, the few larger projections and the sudden enlargement or contraction of section at the joints. These roughnesses cause eddyings and cross currents as well as retard the flow next to the pipe surface. The effect of these roughnesses is represented by n in Kutter's formula:

$$C = \frac{41.6 + \frac{.00281}{s} + \frac{1.811}{n}}{1 + \left(41.6 + \frac{.00281}{s}\right)\frac{n}{\sqrt{r}}}$$

for c and is commonly taken as 0.013 for pipe sewer. The values in the following table, for velocity in feet per second, discharge in cubic feet per second and discharge in gallons per minute for pipe flowing full are based on "n" equal to 0.013 and a slope of 1 to 100.

Diam. In.	Vel. Ft. Sec.	Discharge. Cu. Ft. Sec.	Discharge. Gal. Min.
6	2.46	0.48	220
8	3.10	1.08	490
10	3.69	2.01	950
12	4.26	3.35	1500
15	5.04	6.19	2790
18	5,78	10.2	4600
21	6.47	15.6	7000
24	7.15	22.5	10100
27	7.78	30.9	13900
30	8.38	41.7	18800
33	8.97	53.3	24000
36	9.54	67.4	30300

Plate 1 shows the same information in graphical form.

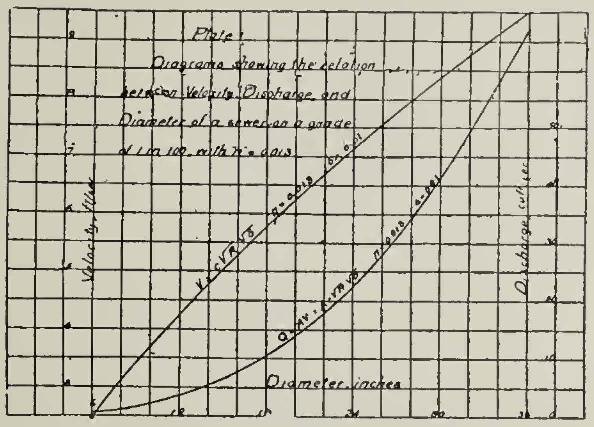


PLATE No. I.

It is not common to have grades as steep as (1 to 100 gradient=0.01) and for the flatter grades multiply the velocity in feet per second or discharge in cubic feet per second by 10 times the square root of the desired gradient. The following table gives the coefficients by which to multiply the velocity and discharge of the preceding table to get value of velocity and discharge for new gradients:

Gradient	.01	.0067	.005	.0033	.002	.00133	.001	.0008	.00067	.00057	.0005
Coefficient for New Gradient	1.	.82	.71	.58	.45	.365	.32	.283	.26	.24	.22

Plate II shows the value of the coefficients by which to multiply the value of the velocity or discharge found with s=0.01 to get the velocity or discharge with a new gradient, s. Example:—If s=0.001 and the pipe is 10 inches in diameter then using Plate II, the coefficient is 0.32 and from Plate I the velocity is 3.7 feet per second, and the discharge is 2.0 cubic feet per second. Therefore the velocity in a 10-inch pipe flowing full on a grade of 1 in 1,000 is 3.7×.32=1.18 feet per sec., and the discharge is 2.0×.32=0.64 cu. ft. per sec.

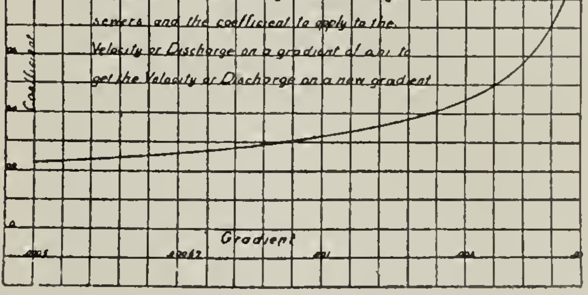


PLATE No II.

As noted above, the flow in pipe sewers is commonly stated to be that corresponding to a value in n in Kutter's formula of n=.013. The statement is frequently made that pipe sewers of large size have a larger discharging capacity than this. Catalogues of several sewer pipe companies have contained statements similar to the following: "All authorities agree that these pipe have a carrying capacity of 50 per cent. over that of brick sewers of the same size." The writers wish to raise the question whether there is any foundation for this statement, and whether a value of .013 in Kutter's formula is a correct estimate of the discharging capacity of pipe sewers. Sewer pipe usually have a smooth surface. There is, however, a difference in diameter in adjacent pipes perhaps as much as 1-2 inch or even more in pipes from 24 to 36 inches diameter. The projections thus formed and especially the changing area of cross-section of the stream from pipe to pipe add greatly to the resistance of the flow. It is a well established fact in hydraulics that changing areas of cross-section consume head or fall. The loss in changing from one pipe to another may not be much, but with 2,100 or 2,600 changes per mile the cumulative effect of even small differences in diameter is noticeable. Experiments on a well laid and clean 18-inch pipe sewer on a grade of 1 in 1000 indicate that a flow larger than that given by Kutter's formula with n=.015 cannot be relied on and other observations indicate that this is as large a discharge as can be expected in pipe of this size and larger. This quantity is about 17 per cent. less than that given by the foregoing tables. The capacities claimed for large pipe sewers must then be said to be exaggerated, and it is even possible that a well built brick or concrete sewer may have as great a carrying capacity as a pipe sewer of the same size or even greater.

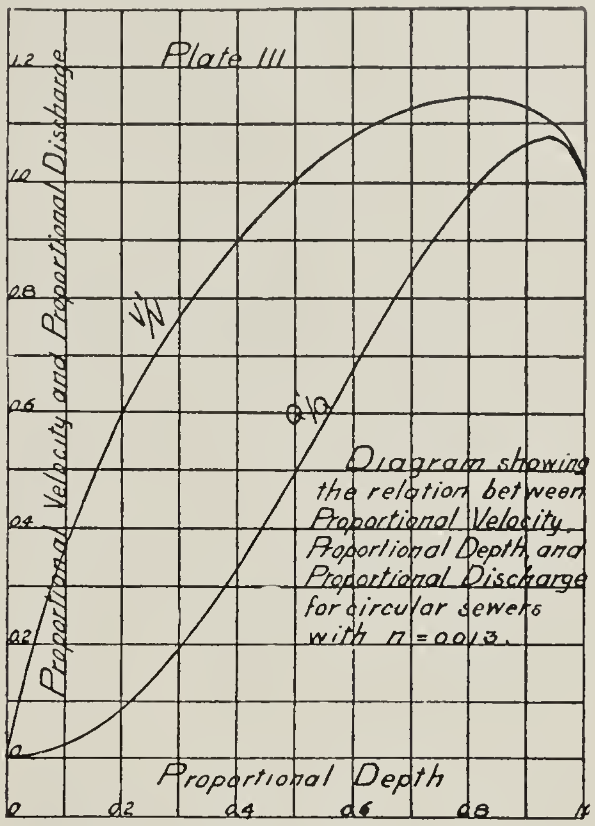


PLATE No III.

The capacity of a sewer, for all practical purposes, is greatest when flowing full. The relation of velocity and discharge when flowing part depth to the velocity and discharge when flowing full is shown in the table on next page.

Suppose the 10-inch sewer on a grade of 1 in 1000 flows only to a depth of 0.67 (2-3) the diameter of the pipe, then from the table above the velocity is 1.11 times the velocity when flowing full (1.11×1.18) or 1.31 feet per sec., and the discharge is 0.795 times the discharge when flowing full (0.64 ×0.795) or 0.51 cu. ft. per sec.

Sewer pipe and specials which meet the following requirements may be expected to satisfy both engineer and manufacturer.

(a.) All pipe shall be of the best quality of salt-glazed vitrified clay sewer-pipe of the hub-and-spigot pattern. The pipe shall be hard and thoroughly burned and be well and thoroughly salt-glazed inside and outside.

Depth of Flow in Terms of Full Depth	.1	.25	.33	.5	.67	.75	.815*	.935*	1.00
Velocity Coefficient	.37	.695	.81	1.00	1.112	1.135	1.142	....	1.00
Discharge Coefficient	.019	.135	.232	.5	.795	.913	....	1.077	1.00

(b.) The body of the pipe shall have a uniform thickness of not less than one-twelfth (1-12) of the internal diameter for all sizes up to and including 12-inch diameter and for other sizes the minimum thickness shall be that shown below:

Diam. of Pipe, Ins.	15	18	21	24	37	30	33	36
Min. Thickness, "	1⅛	1¼	1½	2	2⅛	2¼	2⅜	2½

(c.) No pipe shall vary from straight more than ⅛ inch in a length of two feet. No pipe shall lay less than two feet.

(d.) At least 40 per cent. of all the pipes and specials 12 inches and upwards in diameter, and at least 60 per cent. of all 10 inches and less in diameter, must be substantially circular in cross-section. Pipe with an elliptical, oval, or egg-shaped cross-section shall not vary in any two diameters more than 1-24 of the nominal diameter of the pipe. Pipe with cross-sections which exhibit angles, sharp bends, or flat places that cannot be placed in the top one-third of the circumference under the specified conditions for laying shall be rejected. The area of cross-section of the pipe shall in no case be less than that of the specified diameter.

(e.) All hubs or sockets shall be of sufficient diameter to receive, to their full depth, the spigot of the next following pipe with no chipping of either and leave an annular space at any part of the circumference not less than ⅜ inch and give a smooth and continuous invert. The depth of hub shall not be less than the following:

Diameter of Pipe, Ins.	6	8	10	12	15	18	21	24	27	30	33	36
Depth of Hub, Ins	2	2½	2½	3	3	3	3	3	4	4	4½	5

(f.) Pipe having fire cracks which exceed any of the following limits shall be rejected. (1.) A single fire crack, which extends through the thickness of the pipe shall not be over two (2) inches long on the spigot end of over one (1) inch long on the hub end of the pipe. (2.) A single fire crack which extends only two-thirds through the thickness of the shell shall not be over four (4) inches, if on either end of the pipe. (3.) A single fire crack which extends only one-half through the thickness of the shell shall not be over six (6) inches long, if on either end of the pipe. (4.) A single fire crack which extends less than one-half through the thickness of the pipe shall not be over eight (8) inches long. All fire cracks included in (1) to (4) shall be measured in the direction of the length of the pipe. Pipe having two or more of the above listed fire cracks shall be rejected. Pipe having any of the above listed fire cracks which can not be laid 40 to 50 degrees from the top shall be rejected. (5.) A transverse fire crack shall not be longer than one-sixth of the circumference of the pipe nor extend more than one-third through the thickness of the shell. Two or more such cracks shall be cause for rejection. (6.) No pipe shall be accepted which has in it a fire crack ⅛ inch or more in width at any point.

(g.) Pipe having cracks other than fire cracks which extend through the shell, due to transportation, cooling frost, or other cause shall be rejected, regardless of the length of the crack.

(h.) Unbroken blisters on the inside of the pipe two (2) inches or more in diameter and one-quarter (¼) inch or more in height shall be rejected. Pipe having unbroken blisters less than two (2) inches in diameter and less than ¼ inches in height shall be rejected unless the pipe can be laid with every such blister in the top one-third of the circumference.

Pipe having a broken blister or flake on its interior surface which is thicker than one-sixth (1-6) of the nominal thickness of the shell and whose largest diameter is greater than one-fourth of the inner diameter of the pipe shall be rejected. Pipe having a smaller broken blister or flake which can not be placed in the upper one-third of the circumference, in laying, shall be rejected.

(i.) A pipe, which is not injured in the body but has a piece broken out of the hub leaving a gap of more than one-tenth (1-10) of the circumference of the hub and more than four inches in length and which can not be properly laid with this gap in the upper one-third of the pipe shall be rejected.

(j.) All requirements for pipe in so far as possible shall apply to specials. Specials shall substantially conform to the degree of curvature and general dimensions that may be required. (Applause.)

Discussion

President Stipes: I see we have some sewer pipe manufacturers with us and I presume they are all interested in this question.

A. W. Gates: I have been very much interested in Prof. Talbot's paper, but would state though, that the experiments which he states as being made by Mr. Barbour do not seem to me to be entirely trustworthy, under the conditions which would obtain in this part of the country, where the filling of trenches is usually done by flushing with water. While it is true that the pressure upon the pipe laid to a depth of five or six feet where the dirt in the trench is tamped in might not be to such an extent as to injure the pipe, yet, when it comes to filling the trench by flushing, I imagine that the weight of the filling transmitted to the pipe will be almost doubled. I have found in a considerable amount of sewer construction that the cases of broken pipe ordinarily occur only when laid in trenches in hard ground, hard soil. Pipe that are laid in sand will very seldom be found to be broken. The explanation of this will be found, I think, that in laying the pipe in trenches that have been cut in hard soil, it is almost impossible to pack the filling under the lower portions of the pipe, so that there is lacking a support which would come from packing and filling evenly below and at the sides, so that the pipe, under this defective filling, is allowed to spread out and crack at the top and bottom and at the sides. Some years ago we had a contract for fifty or sixty miles of pipe, requiring six weeks for laying. The pipe was all inspected by the city before it was accepted. A man went through all of the pipe which was eighteen inches in diameter or larger. It required about six weeks. We found some five or six places where the pipe was broken, and with one exception the places were all in soil that was very hard, and we had to use a pick to get it out. That one place on the fill, the whole bank had slid over and there was about 125 feet of pipe broken although none of it was entirely down. All of the pipe taken out were found to be broken along the top or sides and they had spread out because of the strain. With reference to the specifications that the professor cites, I would say I believe these are very liberal, and it seems to me that a pipe that does not come up to these specifications ought not be used.

Mr. W. P. Blair: There is one point not brought out in the Professor's paper. The sewer pipe men are being seriously fought by certain organizations all over this country, and I have myself listened to discourses from time to time upon this question that are so nearly akin to the abuse that the paving brick men are subjected to very often, that I felt a very deep interest in it, and that is this. I suppose that the meanest fight that has been made against the use of sewer pipe in this country comes from a very highly intelligent class of people. A circular attacking sewer pipe sent out by the Municipal Improvement League has been found on the desk of almost every councilman in this country. Particularly is this the case in Chicago, because of the inability, as they claim of the clay men to make a perfect joint. The Professor passed over that briefly, but it impressed me as a point that ought to be taken care of by the manufacturer. The Civic Federations in this country recommend iron pipe instead of clay sewer pipe. They are preaching it all over this country, for connection between house and sewer. If that was wiped out, it would be a great thing for the sewer pipe industry of this country, and I merely call attention for it seems to me that the sewer pipe men ought to be awake to the fact, insisting and demanding that the joints be properly cemented and come back at the effort that is being made against the use of sewer pipe throughout the land.

Mr. Talbot: If I may say another word to offset what Mr. Gates said concerning the experiment of Mr. Barbour. It should be remembered that the conditions under which he expected to apply the tests, we knew that the pipe would be back filled so there would be hydraulic pressure around the pipe such as would be applied to iron pipe, but rather laid so that the pressure would be little if any more than would come from loose filling. The other extreme is, to have plenty of clay mixed with water, and filled in so as to give an approximately uniform pressure over the full length of the pipe, as well as around the outside circumference or surface. Under these circumstances, we might expect the pipe to withstand a much higher pressure than the boiler flue having external steam pressure; and the boiler will stand a good deal more pressure if the weight is on the top than if upon the bottom. We understand that in case of loose filling, improper bedding, and no lateral support, the conditions would be most destructive. Of course, if we get a combination, as Mr. Gates suggests, of a poor support below, large pieces, and back filling with water above in such a way that the water don't reach the lower part of the trench, we would have a much worse condition.

Mr. Blair refers to the matter of joints. That is the worst thing in connection with sewer pipe, there is no question about it. We may make our pipe impervious and get the best quality we can get, and yet the joints will be imperfectly made, and I do not know of a very good way under ordinary constructions to better that. Of course, if we have good conditions we may make a fairly good joint. Referring to the matter of agitation concerning sewer pipe, and iron pipe, I take it that refers to pipe within the house rather than pipe outside the house.

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*Theoretical maximum.

Plate III shows this in graphical form.

Mr. Blair: I have heard the Secretary of the Chicago Improvement Association deliver a lecture in which he said that the difficulty was to make connections not only inside the house, but in the middle of the street and throughout the sewer pipe to the main line.

Professor Talbot: To show that it is difficult to make such a joint and make it tight, I would say that when I built my own house I wanted to put drains around it to carry away the water from the roof. I employed a man who was a capable drain layer, and gave him every opportunity to make a good job. In order to test the pipe after the cement had had a chance to set, we plugged up one end and filled the pipe with water under no head, and we found a great many points of leakage. Surely, if under those conditions leaks would be found, if there was any chance for settlement afterwards, leaks would come.

It seems to me that Chicago—and this is not against sewer pipe either—is far behind the times in allowing the use of sewer, vitrified pipes within the limits of the house for making sewer connections. There is not a town of eight thousand people in the State of Illinois at least, that has grown up to the putting in of sewer pipe in recent years that would permit of that construction.

Mr. A. W. Gates: Referring to the question of joints, I would admit that it is very hard to make a perfect joint in the cement laid pipe. In the small sized pipe I presume it could not be done without extraordinary, extreme care.

I just wish to say that some four or five years ago, I sold the pipe that was used in a contract for Mason City, Iowa. This contract called for the construction of a sewer. About two miles of it, as I remember, was up a creek bottom, that is, through the valley of a creek which was from 100 to 500 feet away. The creek was very crooked, and the sewer crossed it a total of about 13 times, and I think was on an average of about three feet below the surface of the street. This would develop about as bad conditions as could well be, as the excavation was for the larger part in the rock, and the balance in gravel. The engineer was what we all call a "crank," and he insisted on the contractor pumping every bit of the water from the trench and keeping it out for twenty-four hours after the pipe was put in, and on a man crawling inside the pipe and cementing all the joints inside as well as out. After the work was completed, about two years after starting it, I chanced to be there when the council accepted it, we went to the lower end of the sewer and found the total leakage in the two miles amounted to enough to make one and one-half inches depth of water in twenty inches of length of pipe at the outlet,—which would be almost nothing for that distance. Mason City got a good job, and the contractor was "in the hole" to the extent of $10,000.

Mr. Blair: Mr. Chairman, it is not my wish to prolong this discussion, but I will say this: that while it is a pretty live subject to some of our Eastern manufacturers, the joint ought to be made and can be made, and it don't take much skill to make it. Why, it is but a little while ago when it was considered quite difficult to make a concrete cement curb or gutter. Some ingenious fellow came along and made a form, and a couple of men now will skin out five or six hundred feet a day without any trouble at all. Now, all that is necessary is to construct a little form for the joint, mix the cement properly and run it in, and you will have a joint that will outlast any iron pipe that was ever buried in the earth. (Applause.)

J. H. Millsom: I know that making a joint in a sewer pipe line is pretty hard to do, but I had a little experience that convinced me that it could be done. Some six or seven years ago, a company that I was connected with had an irrigation pipe line to supply out in Kansas, and we had to make a perfect water joint. To do that we selected some pipe at the plant, four inch pipe, the best we could get and at each end of the pipe between the pipe and the lug, we put a rubber gasket. We got the best Portland Cement, mixed it very carefully and poured it in the joint. We had a hydraulic test on that of 200 pounds and it never showed a leak. The piece of pipe is standing today. The job was a complete success.

Geo. J. Walters, Chatsworth, Ill.

On motion of Mr. Hammerschmidt the convention adjourned until 2:30 p. m.

THIRD SESSION.

Wednesday 2:30 p. m., January 24.

President Stipes: The first thing on the program this afternoon is a paper by Dr. A. L. Converse, of Springfield, Ill., entitled, "Is the Running of a Brick Machine to its Fullest Capacity Injurious to the Brick?"

Dr. Converse: This paper of mine has one element of popularity. I know you will like it, for it is very short.

IS THE RUNNING OF A BRICK MACHINE TO ITS FULL CAPACITY INJURIOUS TO THE BRICK.

Mr. President and Gentlemen of the Convention:

This subject which has been assigned to me is necessarily open to many qualifications; in fact, so many that it would be impossible to intelligently discuss it without first defining the meaning of capacity. Capacity means limit, full capacity means full limit.

A man can eat more than he can properly digest, but in so doing is he not in fact exceeding his capacity for eating, and does not capacity for eating hinge also upon his powers of digestion?

It seems to me that full capacity in anything means full ability to do the work properly, and when the desired work is defective, the full capacity is necessarily exceeded.

Therefore, if we take the subject as it is literally assigned to me, the answer must necessarily be that no product is ever injured by producing it to the full capacity of the machine engaged in the production.

But I take it that the author of this subject desired that information should be given upon the advisability of rapid work, the resulting product to be taken into consideration.

If that is the object, we deem it important that the kinds of machines used in the manufacture of brick should enter into the discussion as well as the kinds of brick resulting, together with use to which they are to be put.

Some machines in their operation are continuous in their motion, while others are irregular, a continuous motion can be run at a much higher rate than can an irregular.

All brick machines of the press or plunger type are necessarily alternating in their motion, and must of necessity run slow as compared with the auger machines which are continuous in their motion.

The resulting product from the slow machines must necessarily be slow on account of the slow motion of the machine, but it must also be slow for another reason which will be apparent to all, when we consider that time is required for the clay from which the product is made to adjust itself to the new conditions, in other words the molecules have been disturbed in the formation of new relations and they must be held in their new forms sufficienly long to make the new adjustment complete.

Perfect brick made on either plunger or press machines, or even reformed on what are denominated represses, will not result when the machine is run to even the limit which its construction will permit.

The continuous motion of the auger machines not only admits, as stated before, a much higher rate of speed from the mechanical standpoint of the machine, but it also admits it from the standpoint of its product.

Clay in an auger machine requires time to adjust itself to the new conditions the same as in the press or plunger types, but it does not require the same time for the reason that it is submitted to the forming process earlier in the operation of the machine, and continues further in its restrained position.

Perhaps I can make myself clearer if I ask you to consider for a moment the difference in the construction of the dies of the different types of machine.

The press machines all have short dies, while the auger machines have long dies with a gradual taper. In the auger machine the clay travels further in the die, and at the same time undergoes a gradual reduction while traveling in the die.

The result is that the formation of the brick by a gradual reduction process causes less disturbance after being relieved from the confinement of the die, and a perfect brick will result much more rapidly than by any other process.

An auger machine can not be run rapidly, and continue to make brick fast, without the machine is kept full of clay. The fuller it is kept the less room is there for air to get between the particles of clay, and the more compact and homogeneous will be the product.

I have long been persuaded that the accumulation of air in the mass of clay after being pugged, is the most fruitful source of lamination, if that is the case, is it not evident that the fuller the brick machine is kept, and the less air permitted to mix with the clay, the less the lamination? Now, while this argument may be considered somewhat theoretical, we have found by actual experiment that the theory is correct, and that the more rapid the bar of clay is forced through the machine at our plant the less the lamination, and consequently the better the brick.

In my judgment the running of an auger machine to its full capacity makes the best possible brick that can be made with that machine, providing the cut-off will accomplish its work as rapidly as the bar is delivered.

I am further of the opinion that all other machines other than the auger machine must not be hurried if best results are expected. (Applause.)

Discussion.

President Stipes: This is something the machine men ought to tell us something about. Mr. Stoll, we will be glad to hear from you.

Mr. G. C. Stoll: Mr. President, I have nothing to offer more than Mr. Converse has said. He has covered this thing thoroughly, and I agree with him that the fuller you keep your machine, the better brick you make. I do not exactly agree with him in regard to lamination; that is something that relates more to the clay than to the character of the machine or to the die. I know that some brick are full of lamination whether the machine is kept full of clay or not.

E. R. Frazier, Chicago: I do not care to add anything to the Doctor's paper. I quite agree with him that auger machines should be run to their full capacity. The product is better.

Charles W. Raymond, Jr., Dayton, Ohio: I do not know that I can add anything to the remarks that have been made. All machines to be worked successfully should be run to their full capacity. Besides getting a better product, you will get better work out of your machines.

Mr. Warren Ittner: I have learned something from the Doctor's paper and from the discussion. We have been figuring on putting in an auger machine and being a crank on running machinery to the best advantage, I figured that if we got a larger machine and run it slower, we would be gaining something, and I am glad now we did not buy the large machine. We would have spent our money fruitlessly; that is, we would have bought a larger machine than we wanted and not accomplished what we wanted to. I can now see that it would be better to run a machine up to its full capacity. Those who are figuring along the lines that I did about not running machinery too fast would evidently make a mistake if they purchased an auger machine twice the capacity they really wanted. While with a dry press machine, or semi-dry press machine, it is better to get twice the capacity you need, because by running it slow you can regulate the output to the needs of your plant.

President Stipes: How about a soft mud machine, Mr. Hensley?

Mr. J. W. Hensley, Indianapolis: I am not so well posted on the stiff mud machine, as the soft mud. I should not agree with the Doctor, as the slower a soft mud machine is run, the better results you get, but the faster it is run, the cheaper you make the brick. (Laughter.) If you want quantity instead of quality, speed up, but if you want quality, run slow.

Mr. H. E. Shaw: I am not much of a brickmaker, my operations in the brick line have been very limited, but I have had the same experience as the Doctor. We have a clay that we make some brick out of, it runs very easily. We run the machine very fast and it makes very good brick. I might make better brick run slow, but it runs so easily and makes such nice brick that we run fast.

Mr. Hammerschmidt: I have been running an auger machine twenty-eight years. I run it as full as I can, but I run it slow for we have not room enough to take the brick away. I think the Dcotor does not mean to run it fast, but to run it full.

Dr. Converse: You run it fast when you run it to its full capacity.

Mr. Hammerschmidt: You can speed your machine to 250 revolutions, or run up to 200, and keep it full. Mr. Ittner says get a large dry press machine and run it slow, but keep it full and you will make good brick.

Dr. Converse: I do not think it is as easy to keep a machine full running slow as when you are running fast, because you gauge your pug mill just right and the mill has got to be crowded. I certainly should not buy a large machine to make 20,000 brick per day.

Mr. J. M. Powell: I think that holds good with tile. I think it advisable to buy a small machine for a small capacity plant. I think a machine like everything else can be run too fast and that you will lose by running it too fast. A machine ought to be run about where it is designed to run and it ought to be kept full of clay and you ought to have power enough to keep it full.

President Stipes: The next number is a paper on "The Troubles of Sewer Pipe Manufacturers," by Mr. A. W. Gates, Monmouth.

TROUBLES OF THE SEWER PIPE MANUFACTURERS.

By A. W. Gates, Monmouth, Ill.

Mr. President, Gentlemen of the Convention:

The clayworking industry dates back many centuries. When prehistoric man ceased his nomadic wandering and realized the need of a better dwelling than that afforded by a rude hut made of boughs or a natural cave in the side of a cliff he turned instinctively to mother earth and fashioned his house in a crude way from dried or baked mud.

We have no authentic record of the difficulties which he encountered but notwithstanding the almost inconceivable advances made in all lines of art, this among others, we still have difficulties, increased in proportion to the more complex forms into which we fashion the same raw material used by him in the construction of his dwelling.

In the manufacture of sewer pipe the clayworker probably encounters no more difficulties than are met with in many other lines of clay industry, but it is by no means an exact science and he has his full share of trouble to contend with. It would seem a very simple matter to mix in proper proportions several kinds of clay, to dry it and burn it but when the ware comes from the kiln cracked, spalled, blistered and without glaze it is up to the pipe manufacturer to find a remedy for all these defects and it is then that his troubles begin.

The mixing of the clay, after proper proportions have been decided upon is usually the easiest part of the work, although carelessness here may produce disastrous results in the dry rooms or kiln. The press and the dry room are closely connected, as a die not properly proportioned or in bad working condition will usually make pipe which is difficult, if not impossible to dry successfully. In our plant we find that the man in charge of the dryer must never lose sight of the fact that there are two ends to be considered, the socket and the barrel.

The pipe is placed on boards, socket up and after the socket has dried sufficiently to sustain the weight, is turned over and set on the socket. With the large sizes of pipe, especially, we often experience much difficulty in getting the sockets sufficiently dry without cracking to permit the pipe to be turned before the barrel ends crack. The barrel end next to the board sustains the whole weight of the pipe, which in the larger sizes is several hundred pounds and as it drys it shrinks and must creep on the board. A clay shrinking one-twelfth would cause a creep of two and one-half inches in the diameter of a thirty-inch pipe. While this shrinking does not all take place in the drying it is a large factor that must always be contended with. We formerly set the pipe on the boards without anything between, later covered the end next to the board with a liberal supply of dust. This we found to be an improvement but are now using a sharp sand which seems to give much better results than either of the other methods. Our dry rooms have slat floors and are heated by steam pipe coils under each floor and under the roof. By this arrangement we are enabled to dry the socket and barrel separately or both together.

After the pipe have been dried in the house as far as it is possible with a temperature of about 100° Farenheit they are set in the kilns on top of each other to a height of ten of twelve feet. The smaller sizes are nested in the larger ones and on top of all are laid traps, curves, elbows, etc. The kiln setting requires skill and care and is often the cause of much loss. If each stand is not placed squarely on the ring and independent from others it will be likely to lean over and perhaps cause the whole kiln of ware to tumble ever like a row of dominoes.

Now comes the burning and as in other clay products the crucial part of the whole operation. Kiln burning, as we all know, requires a great deal of hard work and if it is successfully done requires study and good judgment. A little carelessness on the part of the burner or his assistants in neglecting the fires or in firing too heavily once or twice may cause a loss of the combined labor from the clay pit to the kiln as well as a loss of fuel, wear and tear on machinery, etc. We need more light on the subject of burning and more educated men from which to make successful burners. I say educated men advisedly as this line of work will demand salaries higher than educated men receive in many other lines. The one thing needful is that they must understand the subject thoroughly and be able to put theory into successful practice.

The first part of the burning is a continuation of the drying and in our judgment is one of the most particular parts of the operation. One quick, flashy fire or the raising of the heat too rapidly may cause the spalling of half of the pipe in the kiln and many times 75 per cent. of the large pipe go to the second class pile or to the dumping ground because some fireman in his zeal rushed things too fast. The drying or dehydration period probably extends until a temperature of 350° or 400° Farenheit is reached and in the burning of pipe should continue for about 48 hours.

The next stage is the oxidation period and should continue about 48 hours more and until a temperature of approximately 1700° Farenheit has been reached. This second period is also of vital importance as it is during this time that the clay is oxidized, the black core eliminated and the body prepared to withstand the excessive temperatures of the last or vitrification period. If the first two stages have been successfully passed there is little likelihood of damage in the last although it is an easy matter to carry the heat to a point where the ware will be crippled.

Salt glazing is the final part of the vitrification period and upon its success in a large measure depends the salability of the ware.

There are a number of troubles about burning with which we at Monmouth are continually experimenting but which we so far have not solved.

Below what temperatures should the dehydration period be confined to prevent spalling? Will a partly oxidized pipe stand as high a heat as one that is thoropghly oxidized? Which will give the more uniform salt glaze, top and bottom, an oxidizing or reducing condition?

When these questions have been answered finally a part of the troubles of the sewer pipe manufacturer will have been ended. (Applause.)

President Stipes: Have we any sewer pipe men here who care to discuss this question? How about you, Mr. Luther?

Mr. James Luther, Terre Haute: We are not interested in the manufacture of sewer pipe. We make large red drain tile, but nothing like sewer pipe.

Report of Special Committee.

Dr. Converse: Before going on to another subject, as chairman of a special committee appointed yesterday, I would like to report on some matters that were referred to this committee, composed of Prof. Rolfe, Mr. Hammerschmidt and myself.

1st. Upon arrangements looking to the selection of a beneficiary for a scholarship to be conferred by the University in behalf of the school of ceramics.

Whereas, The general assembly of Illinois has provided for special instruction in ceramics at the University of Illinois; and,

Whereas, The University trustees have provided for free tuition for one student from each county in the State, the same to be nominated by the Illinois Clayworkers' Association; and,

Whereas, The said Association meets but once a year, and will not have the opportunity at that meeting to make a proper selection at that meeting for such nominations; therefore be it

Resolved, That the President and Secretary of this Association are hereby empowered to make the nominations for free tuition in the Ceramic Department of the Illinois State University, provided that said President and Secretary shall be governed in this nomination by recommendations from members of this Association in their respective counties so far as practicable, and when not practicable on account of any county not having members in this Association, the President and Secretary shall make the nomination from the best source of information possible.

Wm. Hammerschmidt,
Dr. A. L. Converse,
C. W. Rolfe,
Committee.

Dr. Converse: I move the adoption of that preamble and the resolution.

Seconded by Mr. Mamer and carried.

2nd. Upon the advisability of allowing people who may be so disposed to attend at certain periods various exercises and instructions at the School of Ceramics.

Whereas, The Illinois Clayworkers' Association recognize the value to the agriculturists of the State of Illinois resulting from the school of special training during the mid-winter session for farmers; and,

Whereas, This Association believes the same benefit would result to the clayworkers of Illinois if a like midwinter session could be held at the University in which special instructions could be given beneficial to our industry; therefore be it

Resolved, That the Trustees of the Ilinois State University are hereby respectfully requested to open a school of special instructions in Ceramics, and that the same be held during the two weeks preceding the meeting of the Illinois Clayworkers' Association.

Dr. A. L. Converse,
Wm. Hammerschmidt,
C. W. Rolfe,
Committee.

Dr. Converse: I also move the adoption of this resolution.

G. C. Stoll, Wheaton, Ill.

Motion duly seconded and carried.

President Stipes: The next subject on the program is "Stoneware and Stoneware Glazes" by Mr. Ellsworth Elmer Spencer, of Monmouth. Mr. Spencer is not here but his paper will be read for him.

STONEWARE AND STONEWARE GLAZES.

By E. E. Spencer, Monmouth, Ill.

Mr. President and Gentlemen of the Convention:

In order to make this article plain and as straight to the point as possible, I think it is best to classify stoneware as follows:

Class One.—Stoneware, or in other words hard porcelain, known to the masses as china, the body being extremely white, very refractory and vitrous, very sonorous and translucent and one that cannot be scratched with a steel point. The combination of glaze and body are nearly the same so that when fired they become a homogeneous mass, a great favorite with lovers of art and the discriminating housewife.

Class Two.—Stoneware having a body uniformly fluxed that cannot be scratched with a steel point. It is slightly translucent, fairly granular and very sonorous, such as Wedgewood mortars and pestals which is also made in table ware, for instance Wedgewood's celebrated blue jasper ware, has practically the same component parts in both the glaze and body whereas in the case of table ware, the glaze is generally a fretted one and composed of the following materials: boracic acid, white lead, calcium carbonate, feldspar and flint.

Class Three.—Crude stoneware, such as jugs, jars, milk pans, etc. The body is prepared from a semi-fire clay generally called potter's clay, a body when properly fired ranges in color from a light buff to a light drab.

In recent years the glaze is of a metallic nature and compounded of feldspar, oxide of zinc, flint and calcium carbonate.

As this article refers to crude stoneware and crude stoneware glazes I will say nothing regarding Class 1 and Class 2.

It being requested that I say something on the crawling of the glaze on Class Three, and a method to prevent it, I would first ask, what is the cause of it

I have heard many different reasons that caused stoneware glaze to crawl in the kilns from my colleagues. First, the majority attribute this to damp kilns. For instance, if a kiln be put out of service for a period of 6 or 8 weeks it undoubtedly would draw dampness and to put this cold, damp kiln back into service would cause the glaze to creep up in puddles or roll off from the ware entirely.

Second, The cause has also been attributed to water backing up in the underground ducts of the kiln of a down-draft type.

Third, That in case the ware is semi-dry when it goes through the dipping tub the glaze would peel off or in case of the ware being dry when dipped and should be left standing over in the dipping room several weeks, it would part and fall off in great flakes, both before and after going to the kilns.

I rather think that any man having the supervision of a stoneware plant, large or small will be forced to face all three of these above ware and kiln conditions, therefore, I wish to speak from practical experience.

First, That in my early experience I considered it absolutely necessary in case of a new kiln or an old one that had been put out of service and drawn dampness to put the door up and slow-fire it for 24 to 36 hours in order to insure good glaze and a safe kiln of ware.

My experience lead me to find this method rather expensive, therefore I went to work to overcome this glaze crawling, first by starting with the body on which a glaze is to be set, and then by adjusting the glaze to fit the body on which it is to be applied.

I have been told that any good stoneware glaze will work successfully on any good stoneware clay. Very probable that might answer with some potters but I assure you it would not be practical.

Taking from what I know of different stoneware clays, I cannot see how they could be called successful, therefore, for example, we will take the two following extremes, one clay high in alumina and low in silica, the other high in silica and low in alumina and the two glaze formulæs as follows:

Glaze No. 1.—Aluminus clay, 38 stone weight, calcium carbonate, 19 stone weight, flint, 38 stone weight, feldspar, 32 stone weight, lead 20 pounds, zinc oxide 20 pounds.

Glaze No. 2.—Flint 64 pounds, feldspar 128 pounds, calcium carbonate 40 pounds, ball clay 40 pounds, china clay 40 pounds, zinc oxide 64 pounds.

As to the question in point of water backing up in the underground ducts in kilns of the downdraft type. My experience teaches me that there can be no possible effect on the ware when the draft is going directly away from the kiln. This plant has now in operation seven 32 feet downdraft kilns and during the wet seasons water backs up to a height of 12 inches in the underground ducts and I find it does not effect the ware in any form. Therefore, I must consider that theory erroneous.

Second and third, I do not believe there is a day in the year but what we are compelled to send ware through the dipping tub that has barely turned gray, also ware that from various causes will be left standing in the dipping room for weeks and in some instances, months, but

I experience no bad results from this and I may add, we burn all our ware in saggers and that I have caused from time to time several bungs of saggers to be submerged in a barrel of water and left to remain there until thoroughly wet, then immediately filled the wet saggers with ware and placed them in the kiln and found when the kilns were drawn that the experiment gave the glaze no bad effect, therefore, in my judgment, the only thing to prevent stoneware glazes from crawling or falling off is to create a glaze to fit the body to which it is to be applied. (Applause.)

Discussion.

President Stipes: This paper is now open for discussion. Mr. Purdy, we would like to hear from you.

Mr. Purdy: The paper just read is very gratifying to me indeed, not only for the information it contains, but the spirit in which it is written. Potters, including stoneware people, have been inclined to be rather secretive, to stay away from the convention and not tell their experience. I believe this is the first time in the history of this Association that a potter has come before you with a paper. At least they have not been here very frequently and I believe this marks an era, a time when representatives of all ceramics industries will be in harmony with all forward movements of our craft, such as the movement we made last year in the establishment of this school. As to the subject of Mr. Spencer's paper: I was particularly interested in that part of the paper where he stated that he closed his kiln and slow fired them for a time so as to prevent "crawling." In the latter part of his paper he stated that a glaze and a body suited to each other would be necessary. As a matter of fact stoneware men know that they have used to much felspar, too much zinc, and the glaze "crawling" is apt to ensue, and where that particular glaze was set in a dry kiln the glaze would not "crawl," but where the kiln happens to be damp, or the ware happens to be placed within the sagger or banked with another piece, as we bank the larger and smaller ware, that glaze would crawl, but if all conditions were right the glaze would stand. Mr. Spencer attempted to show just the line that would have to be drawn by the glaze which would crawl readily and where it would not crawl readily. He recognized the fact that the dampness would make the glaze "crawl."

This question may seem to some of you not very pertinent, and not to come home to you directly because it is allied to pottery. Pottery is not any more scientific than brick or sewer pipe. They have the same difficulties, the working conditions are the same, the principles involved are the same, so that the principles spoken of in this paper are evidences that your difficulties are somewhat similar. Why in your brick do you have black cores? All these questions are traced back to the one fundamental principle; so I say a paper of this sort is very gratifying to me.

President Stipes: Mr. Veiock, have you anything to say on this subject?

Albert Veiock, Monmouth: I have nothing to say except that I would like to ask Mr. Purdy to recommend or give us some recommendation on what would be good to stop that "crawling."

Mr. Purdy: The question of fitness of glaze and the body, of course, requires considerable study, but in general, soluble salt must be used in the glaze, so that in drying it will crystalize and unite the glaze to the body. Some clays contain a slight mixture of salts naturally, and in this case the addition of soluble salts are not necessary.

Mr. Veiock: Sodium is a very bad thing to use as a soluble salt. It makes the glazes run. Dip a jar in the glaze and turn it over and it will run down in streaks on the ware. We have found that the best thing to use, to prevent "crawling" and keep the glaze in proper condition, is barium carbonate. If the Professor can tell me anything that would be better than sodium, we would be glad to hear it.

Mr. Purdy: You have got me.

Mr. Gates: Mr. Purdy made some remarks which are of great interest to me. I don't know whether it has been considered here to-day, but this question of black core is of interest to me. We are troubled considerably with this black core in sewer pipe manufacture and it occurred to me that possibly some of our brothers who manufacture brick have the same difficulty and had found some way of overcoming it. I would like to hear something on that line.

Mr. Roberts: I have never had any experience in black coring sewer pipe, but I have had it in paving and building brick. When your kiln gets to the right point in burning and you are raising your fires, you have got to hold it right there until the water gas gets out of it before you can finish raising the heat. Right there, just when you think the water-smoke has gone, just at the point where the fires are getting red, where you get your ware too hot and the water and gas cannot get out, is where the black core comes in.

Mr Blair: Prof. Orton, of the University of Ohio, discussed that question very fully some years ago and he proved to his own satisfaction that it was caused by the carbon in the clay which had not escaped, and his conclusion was that the temperature should be kept below the vitrified point until that carbon and the gas formed by the burning of the carbon had gone from the ware.

Mr. Roberts: I might give another little incident. In one lot of brick we put in a few of the ashes from the boiler and I think we got 100,000 brick with black core. I think there was enough gas in these ashes that did not form until the brick were red hot and there seemed to be enough carbon in the ashes to form this black core, which shows that Prof. Orton's theory was correct.

President Stipes: I would call on Mr. Blair to give us a little talk on this black coring.

Mr. Blair: I would be very glad to have someone tell me something. (Laughter.) This matter has been more or less trouble to us all, and there has been the most unsatisfactory investigations along this line to endeavor to determine where we are at. On one other occasion when this matter was up, I made out a sheet of questions, and in connection with them the answers to these questions. Perhaps I won't get them all just as I arranged them then. I wanted to know first the condition of the brick when set, whether they were damp, or wet or whether they were entirely dry. Then after the first twelve hours I wanted an expression as to the condition of the fires, the condition of the draft, the condition of the draft at the bottom of the stack, the condition of the smoke coming from the stack, as nearly as could be. I wanted to know that same thing after the end of 24 hours' firing, and in addition to these questions, I wanted to know the conditions of the trial brick at that time, and of course, whether it showed any evidences of the black core at that time and the conditions of the smoke at the top of the stack. This could be determined by sighting and by measuring by pyrometers, etc. Then I wanted, at the end of 48 or 36 hours, an answer to all these questions, and of course I wanted to know the temperature of the lower fire hole and the upper one. Pursuing that investigation, taking temperature and observing these conditions, every ten or twelve hours, you are enabled to discover the proper condition of your fire and you know when your carbon is going out. I am not as smart as some of us pretend to be, but looking in a fire of say, from fourteen hundred to eighteen hundred degrees, you will not be able to decern by the eye a difference of two hundred degrees. Maybe you will come on the yard in the morning and the fireman has got his fire two hundred degrees lower than it was the night before; that is a bad condition of things, but you don't know it, unless you use a pyrometer. You cannot tell whether the fireman has attended to his duties or not. I believe that in burning the very coarsest of ware, we ought to exercise just as great care and pursue practically the same course, if you please, as is pursued by the Rookwood Pottery at Cincinnati in burning pieces of ware worth $16,000 or $18,000. A brick that is worth only a cent after it is burned, should have just as much care and attention, and these things are just as necessary for the brick man as for the Rookwood Pottery. We ought to know within twenty or fifty degrees how our fires vary. It is harder to get the carbon out of a repressed brick than out of one not repressed. In dropping the brick into the mold, the brick may be a little more compact and the pores are sealed up so it takes longer to get the carbon out. It may vary some degrees with the same amount of carbon, but you will not find a great amount of difference in the brick, not all brick are made alike. Brick are a good deal like man, there are no two alike on the face of the earth.

Dr. Converse: I think of all the conventions I have attended I do not remember a discussion upon this subject to the extent that it has been discussed in the last five or six minutes and the emphatic way in which Mr. Blair speaks of it. It is a matter which troubles us not a bit. We have always attributed it to improperly dried brick. We have never had a particle of difficulty with our dry brick. It seems to me that it must not only be properly dried brick, but it must be something in the material which is made into the product which causes this trouble.

Mr. Blair: Will you let me ask you one question, Doctor? Do you know at what degree of heat the carbon is burned out of your brick?

Dr. Converse: No sir, I do not.

Mr. Blair: Well, if you do not know that, how do you know that it may not be burned out at 800 degrees and if so, how do you know that from raising your fires from 800 degrees to 1300 degrees you may not be throwing away and have thrown away for the last five or six years, with no advantage whatever to yourself a ton of coal for each thousand brick you make.

Dr. Converse: I know we have not burned that much for each thousand brick we make.

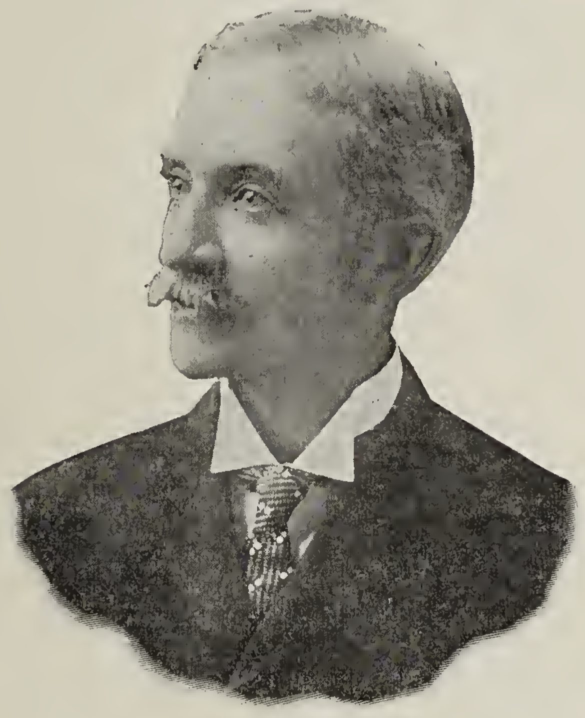
Mr. Blair: I mentioned that quantity to be extreme and illustrate my position. How do you know that you have not wasted a quarter of a ton?

Dr. Converse: Well we have not burned an excessive amount of coal and we have made brick at a profit. I do not pretend to know myself. I rely more upon my superintendent than my own judgment. I know we have had no difficulty in the way you speak of. That was what surprised me. It looked to me as though in some localities they had more trouble than in others. I do not know how it is at Galesburg, but of all the difficulties I have heard them discuss I never have heard this and it is new to me, that troubles of that sort are so serious.

Mr. Gates: I think that the composition of the clay has undoubtedly a great deal to do with it directly. Of course, if the ware is put into the kiln when green, not been dried in the dryer, it must be dried in the kiln, but from the experiments we have made and investigations we have carried on, we believe that the black core does not appear until we reach a much higher temperature than would be necessary to thoroughly dry the ware. As I stated in my paper I think that all the water is out probably by the time we reach a temperature of 400 or 500 degrees. We cannot eliminate the black core from our ware until we reach 1700 or 1800 degrees and cannot always do it then. Of course there is a question as to whether a piece of sewer pipe or brick with this core is not as good as one that has not got it, but it seems to me that the ware stands the final stages of the burning very much better when the core is out, than it does when it is in.

Mr. Blair: It has been suggested to me by Mr. Barr that Prof. Orton handled this question very minutely and entirely satisfactory for the National Association and his paper has been issued in pamphlet form by Mr. Randall. I merely make this statement because if the members of the Illinois Clayworkers' Association desire to be thoroughly informed on that subject it would be better for them to get Prof. Orton's pamphlet. I know I perused it with a great deal of satisfaction and benefit.

Mr. Purdy: On one yard on which I was recently, I saw some black core brick and I was asked the reason for it. I asked if the whole kiln showed the black cores and was told, "No, only here and there." I asked if it was only in one section of the kiln and was told "yes" and then I asked if the ware was always set uniformily dry. The burner said no, but the majority of his brick were absolutely dry. At another place I asked the gentleman whether he set his ware dry or damp, and he said he did not have drying capacity so he saw to it that the brick went through the dryer in a certain condition, not dry, but partly so, just so he could handle the brick without marking them. And he finished the drying in the kiln, and he said he never had any trouble with black core. He said he did not hustle at any point between driving off the chemical and the mechanical water. Then he hustled and finished in eight days. Nothing could be gained from that man on this subject. The other man who did not respect this period between the chemical and mechanical water, but hurried through it the same as he did his kiln when dry, got the black core. Because here and there was a brick behind the others, so far as the drying was concerned and it had to dry out while the other brick was being heated. These brick could not dry as fast and they got behind and when the other brick was passing between the chemical water and mechanical water period, these damp brick had not expelled their water and when they ought to be vitrifying they were drying and they got red hot and their gases were sealed up inside. Every clay has carbon in it as Prof. Orton has pointed out. That carbon must be thoroughly burned. If not thoroughly burned it is converted into a ferrous silicate by the oxygen and the black core is the result. How to eliminate this is the question. As indicated in my first remarks, that core appears between 500 and 800 degrees F. By firing as slow as the kiln will permit, all this carbon will be burned and the iron will not be reduced because the gases find their way out. But if you go through this period rapidly and seal these gases in the inside then, in the language of the street, "there is something doing." The iron acts like a sponge and as soon as it gives up the oxygen it will act in combination with the silicate. It is not the explosion of the gases so much as it is perhaps the Co2. The Co2 we get before these brick are hot on the outside, the black core is not hardened but ferrous silicate. Now with Mr. Gates trouble I do not know whether it is a pipe here and there or a whole kiln.



Prof. A. N. Talbot, Urbana, Ill.

Mr. Gates: Sometimes a whole kiln and sometimes the large pieces.

Mr. Purdy: You cannot tell from the outside whether it is dry on the inside. As I understand it, large pipe take up so much floor space that you hustle them through the dryer to the kiln as fast as you can, so it is a great temptation to hustle them right into the kiln and finish up the drying there and that is what leads to bad results.

Mr. Blair: It is not of utmost importance that we know at what time this black core occurs and is it not true that when it is gone we can raise the fire rapidly without injury?

Mr. Purdy: At. 500 degrees C. or 900 degrees F. is the beginning of the period in which we find the carbon beginning to burn out. You take it in the brick and it will be black on the inside, hold your fire at 900 degrees and you will see the black core disappearing until in time it will disappear altogether. Now at 400 degrees F., we find is about the highest temperature at which you can hold your kiln and burn it out. Any temperature between this you go beyond this you can't burn out this carbon, for if you go beyond this period you vitrify the outside, so as to prevent the escape of gases. At this point you want to hold your ware until all the carbon is burned out.

Mr. J. M. Mamer: One of the first conventions I attended was at Springfield, I think in January, 1895. Dr. Converse had started his plant shortly before that, and we went out to visit the factory, and some of us took some of the samples to see what they were. One of the members told me he put his brick on the top of a kiln of tile he was burning, and he had the brick pretty nearly at a white heat 36 hours after they had started, and when he pulled the brick out of the kiln it looked like a loaf of bread. The sample we took, we burned in a kiln where we were burning some large block, and we had to fire rather slowly for the first 48 or 50 hours, and that brick came out in good condition. I think that illustrates the point very nicely.

Mr. Powell: I would like to ask what would be the color of the ware at 900 or 1400 degrees.

Mr. Purdy: Under ordinary circumstances an ordinary red color. At 800 it would be red, carry that on a little further and you would get a very bright red.

President Stipes: Gentlemen, we have about exhausted this subject, so we will pass on to the next. Mr. Martin Laurer, of Chicago, is with us now, and will talk to us on "The Clay Building Block—Its Death and Resurrection."

THE CLAY BUILDING BLOCK INDUSTRY —ITS DEATH AND RESURRECTION.

By Martin W. Lauer, Chicago. Ill.

Mr. President and Gentlemen of the Convention:

I should have been here this morning, instead of taking up the time this afternoon. Some of these discussions have been of considerable interest and have been lengthened out, and it is a serious question in my mind when I size up the number of building block manufacturers present, whether the gentlemen who are here will be interested in the subject, and I feel constrained to pass it by. But I will try to make it as short as possible and cover only the points that I think are essential. You will probably ask yourself the question, and perhaps arrive at the same conclusion that many of us do when we buy a new book, the cause of its title; after we have finished reading the book we wonder what relation the subject matter of that book had to its title, and we decide that there was not any relation whatever; and my remarks may have the same relation to the subject given me here —The Clay Building Block Industry—Its Death and Resurrection.

I do not pretend to assume the functions of the Almighty, and if the hollow block industry is dead, I would not for one moment attempt to resurrect it. If it be dead, I believe in doing what the physician does when he gets through—he calls in somebody else. The question before us is, or will be, is the industry dead, or is it playing possum? Let us see. Some years ago, there existed in the States of Illinois and Indiana, three factories, as near as I can remember; what I say to you today will be approximate facts, I do not pretend to give you the exact facts. One of these factories had as an adjunct, to its business, and it was considerably of an adjunct, the manufacture of hollow building block. The other two plants practically devoted their entire attention to the manufacture of this material. We will call these plants A, B, and C, and they are the pioneers in the hollow block industry west of Ohio. Plant B was the largest of the three and devoted its entire output to this industry. Plant C really had but one kiln, though it was called a two-kiln plant. One kiln was 26 feet, and the other was a little kiln hardly worthy of the name of a kiln. They would make block enough until they have one kiln full, and then they would lay off until they had sold them..

That was sixteen years ago and the manufacturers were thoroughly embued with the idea that there was a great future for the hollow block industry. The reason was, they came from Ohio, and know you that a great many of our great clayworkers and great men of the country come from Ohio. They started to do what all of us must do with a new industry, and that is, find a market. If there is no market, they must try to create one. The work was slow and discouraging. As a salesman in that line, I began practically very close to the beginning and it was hard work to introduce a new material and create a demand. I remember one night I went home very happy because a certain contractor in the building line, whom I had been soliciting had said, that if I would come and see him in the morning, he would give me an order for hollow block as a trial. I went out about six miles from town the following morning and the gentleman said, "Well I have been sleeping over this matter and I think I will let someone else do the experimenting." And that is a story that could be told time and again.

But the manufacturers persisted and gradually there came a demand which increased rapidly, and the business, judging from the experience of the manufacturers, was profitable, although they would lead you to believe it was not. If you ask them about the hollow block business, they would say, "Well, not very good," and then they would wink the other eye, and you would know what that meant. That continued until about the year 1904. Instead of three plants, there were in existence west of Ohio, feeding the same territory, nine plants. The little one-kiln plant I spoke of, instead of a one-kiln plant is an eight-kiln plant, and all the new plants started out with ten or twelve kilns, and the plant was laid out for about twenty-five kilns. Most of these plants were giant plants, and about that time something happened, or at least the manufacturers discovered something and what was it. They found out that the business was not what they thought it should be. The demand was falling off, and they got together and called in a board of expert physicians in the case and laid the case before them and they said this industry, which had been a weakling, has grown up to be a giant and promised to do well, but has suddenly shown signs of ill health and then indications of being dead and they wanted these physicians to examine and report. The first thing they found was a very faint pulse, a state of comatose and suffering from complete exhaustion. The board of examiners brought in their report. It was brought about by three things; first, over-production, second, under-consumption. Now, you gentlemen in the brick business know what these two things will do when you put them together, and where you will bring up. You raise three plants to nine—well to just give you a small idea, quadruple the capacity of each plant and then if there is no demand or no consumption, there is likely to be "something doing." New manufacturers who jumped into the business could not understand what the matter was. They had invested forty to fifty thousand dollars in the plants, and the stuff was not moving out of the yards. They did what others do—cut the price a little—and the other fellow thought he ought to do the same thing, and they kept up the merry game for some time. Then, *that* did not increase the consumption. What was wrong?

They went back to the board of physicians, and said, "You told us of two causes of the trouble with this business, but there must be something else. What is the third cause?" And the physicians replied, "Well, gentlemen, we did not care to tell you of that cause because we knew you would not take kindly to it. You know, gentlemen, a man may become very ill with one or two troubles which may not be enough, however, to keep him in bed, until usually some third trouble more serious than the other two comes along and puts him on the flat of his back; and we are sorry to say that this looks as if it might be that third trouble—a new trouble. It is so recent that we have not been able to get a very clear idea of it. We have just been able to find a name for it, and of course that name must be given to you in Latin—we always give these medical terms in Latin; and this new disease which we find is making the most trouble with our patient, the third cause for his present condition is known as *Hollow Concretcitis.*" (Laughter.) Now, this disease may be curable, but we don't know the remedy yet. We know that it is a microbic disease, is caused by a microbe; and that microbe, so far as we have observed, has gone all over this middle country,—east, west, north and south. It has touched at every little hamlet and at every city and village,—every place where the railroad has touched and human beings are, there that microbe has found a lodgment. It has attacked the wealthy and important men in our town, as well as the humble mechanic,—it has stung them all. And the results? A few minutes after the sting, the banker comes around town talking thus: "Gentlemen, have you heard of this new thing, this hollow concrete block? And the mechanic, who probably does not have any money, immediately after he is stung, becomes possessed of the idea that there is something for him to do besides following his trade or working as a laborer, and he immediately gets this disease and can talk of nothing but Hollow Concrete Block; and the result is a race between the banker and the hod-carrier as to who can get the first machine for making the hollow concrete blocks in town." Now, gentlemen, that is the trouble. Last year it was comparatively new, so new that manufacturers of it thought it necessary to scatter hollow concrete block literature everywhere. It has taken possession of that clay manufacturer, our good brother Hammerschmidt, and he last year had on exhibition here three blocks, which resulted in a little misunderstanding and created considerable merriment and amusement; for when I came in first and saw those blocks there I thought I had come into a hollow concrete building block machine convention, or something of that sort. I went outside and saw it was the Elks' Lodge Room and that I was all right. I have been mistaken, I will admit, and have changed my views—some of them. And in the spirit of fair play, of which we boast as Americans, and in order to demonstrate the fact that I appreciate that we have arrived at a cycle of "square dealing"—as President Roosevelt says, I want to acknowledge that I have changed my ideas in some respects regarding this hollow concrete block matter,—this material which has caused us so much trouble. I am satisfied that the introduction of the hollow concrete block has done more to stagnate the hollow clay block industry than any other thing; and I am satisfied that had this material not intervened and come into he market there would not have been an over-production, that the diversion has withdrawn from the hollow clay building block trade that which would have served to stimulate the demand that should have consumed the extra quantity produced. I will cite you one case showing this result, out of a hundred others. I used to have a customer who would buy from five to eight car-loads of hollow clay building blocks each year; and, suddenly, after years of business relationship, he cooled, and I couldn't even get a pleasant look out of him. Then I wrote him and my letters were unanswered. Finally I wrote him a letter which was so prepared that all he had to do in making reply was to put his check mark opposite the word "Yes," or "No." with reference to the order for blocks, and enclosed a stamped and addressed envelope for return mail. He answered that letter by writing across the bottom of my sheet, "Dear Sir: Am using no more clay blocks. Have a machine of my own, making concrete blocks. Yours truly." Now, this man was the only material-dealer in that town, and if I could not sell to him I was out of that town; and I have been out of it ever since.

I said last year that I did not think much of the hollow concrete block as a block. Well I don't think much of it yet. I believed a year ago, that one year would put the block out of existence. From what I had seen of its absorbent quality,—aside from the fact that it was being made by Tom, Dick and Harry,—and Hammerschmidt. (Laughter).—I thought that that, in itself would kill the business. (Applause.) But I want to confess, gentlemen, and my dear friend, Hammerschmidt, that I have been greatly mistaken; and I humbly wish to acknowledge, in the presence of the gentlemen who were probably present a year ago, that I firmly believe that hollow building blocks of concrete will be made in greater quantities this year, and next year and the year to come than any year preceding—I firmly believe it. If I should tell you anything else, I would be telling you an untruth; and I make this statement fully conscious of the fact that about two-thirds of my bread and butter depends on finding a market for the hollow clay building blocks.

A man approached me some time ago, and wanted to take me out to dinner. I said, "Very well, I will be hungry at half past twelve." We had dinner, and judging from the place he took me to, I said to myself, "I wonder what he wants?" But we had a good dinner, and were smoking afterwards—and it was a very good smoke. We talked of the weather, the markets, and so on; and finally he said, "Say, don't you know that you could be making a great deal more money than you are making now?" I said, "Is that so?" "Yes," he said, "and I am going to put you in the way of making it." And what sort of a proposition do you suppose he ladled out to me? He had a hollow concrete block machine he was manufacturing, which he proposed to sell and was at the time selling, putting on the cars with all the accoutrements that go therewith, for the sum of thirty dollars; and he said that if I would take hold of the handling of that machine, there was $15.00 profit apiece in it for me. (Laughter.) Now, probably some of you gentlemen have circulars of that machine that is selling for $30.00; if you have not, you will get them I think. Now, you can see for yoursellf that when you can buy a concrete block machine for $30.00, every hod-carrier can start in the business, while it takes forty, fifty or sixty thousand dollars to start in the clay business. If they have not got the thirty dollars they can borrow it from a friend, or, I am satisfied that the machine man will let him take the machine and pay for it on the installment plan.

Now that being the condition of affairs, is it not reasonable to suppose that there will be thousands of machines sold this year; and maybe they will reduce the price next year, and there will be other thousands sold; that out of these thousands of men who start in the business, some thousands will fail; but a certain fixed quantity of men will stay in the business, they have such absolute faith in it, and they have ways, too, of doctoring up the wavering faith of others, like Hammerschmidt, who takes a block of the concrete variety and soaks it in boiled linseed oil for six months, and then brings it to the convention to show that it is, of necessity, waterproof. (Laughter.) Yes, they will stick, a certain quantity of men will stay in the business, and there will be concrete blocks on the market galore,—bad, indifferent—and some good.

Now, one of the clay men remarked to me, "You are wrong. The concrete block is going out of the market. Down in my town," (and by the way, it is Terre Haute, and you can guess who the gentleman is—and he is a very good friend of mine), "down in my town they are not putting them in any more. Last year I didn't sell enough clay blocks to fill a small sized kiln, and this year they are putting my blocks down in the ground, to grade, and putting the concrete blocks above." That explains, in some degree about the concrete block. There is something about it that appeals to the man who is building a house, or is about to build one, and the man who ultimately buys, or the woman, or whoever builds a house, they really don't know one thing from another when it comes to selecting the material. They are incapable of distinguishing between the essential qualities, judging of the real merits of this or that; and they have an idea like this: "Here is a material that looks like stone, and to all intents and purposes *is* stone." It has a good, substantial appearance—it looks well—and of course the man who sells it overlooks the fact and does not state to the buyer that it absorbs moisture from the ground up all the way through. He says nothing about that and the material is used. It is its resemblance to stone that is making the market for the concrete block. The clay block stands for what it is, not upon its resemblance to this or that. But take that point of resemblance from the concrete block, and as compared with the clay block that can be wrought into diverse or regular form and the concrete block is not a "thing of beauty." But nevertheless, it has a resemblance to stone, and in that respect is more attractive to the eye, and people want it for that reason for basement walls, and for that reason the hollow concrete block is in the market, and is going to stay in the market.

I don't want you gentlemen to get the idea that I am maintaining that there is no market for the clay block; because if I thoroughly believed that I would "stack up" with concrete machine at "fifteen dollars per machine." I believe that there is a future for the clay block business, but it lies entirely outside of the field of endeavor so far pursued by the manufacturers. I believe there is a field for the clay block from an architectural point of view which will make the material as desirable as the various grades of building material; and while the time is not now, (nor do I believe it will be next year nor the year after) the time is coming when those manufacturers who are still in the business will have learned where that field is. A great many manufacturers who think they have reason to believe that there is no such field, or some of them, still hesitate to entirely give up the clay block manufacture, and we find them with both eyes gazing in the direction where they think they will find a few orders for the blocks; not taking their eyes away from that objective point for a minute, they are feeling around for some field to experiment in—with chimney blocks, and with this, that and the other thing, trying to find something into which to gradually slide from the clay building block industry.

I believe, and I feel it deeply, that the manufacturers of clay blocks who remain in the business will, after several years, find a field which will raise the hollow clay building block to a higher standard among building materials, take it away from the use for basement foundations, and place it where it belongs—to a place by the side of face brick for entire structural purposes.

I thank you gentlemen. (Applause.)

Discussion.

President. Stipes: Mr. Hammerschmidt defend yourself.

Mr. Hammerschmidt: Mr. President I have no speech to make in regard to this. I knew it was coming, but I want to call the attention of Mr. Lauer—where is he? (Laughter.) to the fact that neither myself or my company ever believed or wanted to believe that the cement block was going to take the place of brick or hollow clay block, of any kind to any extent. A firm, whose name I have forgotten sold a six room house of concrete block for $600.00. A local building and loan association advanced the money on that house and the next year an old friend of mine bought the house of the building and loan association and in a little while he came to me and said, "William, my house is falling down. Can't you tell me what to do. I got beat." "Oh," I said, "it is not as bad as that is it?" But it was crumbling off or breaking in the whole side where the earth was against it and the sides were bent in. I sold him the brick and he put an 8-inch wall underneath the cement block. Now the hollow block men made a mistake, and they will continue to make them. I am not here to talk cement block, I am a clay man and have been for 28 years. Our company is one of the companies which undertook to make these block, and the tests we have made in one year are sufficient to show us that they will stand. In our town there are six houses built of these block, we furnished them and they did not take the place of brick or clay material, for every one of them would have been built of wood and the cement block took the place of lumber.

M. W. Lauer, Chicago.

Mr. Lauer: Was that wall built by a shoemaker or a brickmaker?

Mr. Hammerschmidt: It was built, I think, in 1892, a good house with six rooms. At the time it was built it was a dark shade. We make good block, we were forced to make them by the people with whom we did business. We never advertised that block except on our calendar. We run two machines with three men and we never make less than from four to five thousand. We have orders now for three or possibly four houses and I don't know how many foundations are waiting for those cement block. Our machine is not a $30.00 machine. It cost us $125.00.

Mr. Kern Shrum: He speaks of these houses as if they had not been built of concrete block, they would have been built of wood. How does he compare the cost of a brick wall, with a concrete wall? This concrete wall would be cheaper than brick, but would it be as serviceable.

Mr. Hammerschmidt: The lady who built this one house which was about 35 by 38, or nearly a square house came out to the plant. She said she had a bid on lumber and she did not want a brick house, and so she decided to make it a cement block house. All the houses that we furnish the concrete block for did not want brick. They wanted either a frame house or cement block house. We furnished these block for an eight inch wall, from the bottom up for $532.00 on the cars.

Mr. Shrum: What weight would these block carry per square foot?

Mr. Hammerschmidt: I have seen a similar block carry 200 pounds to the block.

Mr. Shrum: In our section of the country, we will agree to build any brick building at a price that any man will build a concrete block building that will carry the same weight. You know the engineers in any of the plants they put in, insist upon a weight of 500 pounds to the square foot.

Dr. Converse: I thought you started to tell us that a concrete house is cheaper than a frame house.

Mr. Hammerschmidt: No, it is not. Most of the contractors, both the cement and brick contractors, said, "We will put up that house for $3,600" and would want a couple of hundred more for a porch and cement steps, etc. I have advised against cement block, but when they won't take anything else, then we sell them cement block. I am opposed to sand-lime block. We don't make them at all. We sell the block, rock faced block, at 14c. The smooth faced for 11c. The block are 8 x 8 x 16.

Mr. Mamer: We have been making hollow clay block for the past ten years, and we have had various experiences. We have come to one conclusion. If a man comes to us and wants a cellar foundation of brick, we invariably advise him to use hollow block and face it up with four inch brick on the outside and it gives very good satisfaction. We have had cellars put in with a single course of hollow block that would not stand water as they should. The worst trouble that we found was the mortar at the ends would not stay in place. There seems to be an expansion and contraction in the block from the changes in temperature, which will loosen the mortar, and by putting four inches of brick on the outside, it makes a wall second to none. I built a house this fall from the bottom of the cellar up to the roof that same way, with four inches of face brick on the outside, lined it with hollow block and plastered my walls, and I am satisfied that I am going to have a good dry house.

D. F. Morey: I would like to ask if it would not be as cheap to make a twelve inch wall all of brick?

Mr. Mamer: No, it would not be as cheap because the difference in the expense is in favor of hollow block, in the small amount of mortar it would take and besides you have a better non-conductor of heat or cold and a dryer wall than you can possibly get with brick. I will say that I think the most successful clay block wall that can be made is one where the openings will run perpendicular in the wall instead of horizontal, for then they can contract and expand without causing any trouble.

Mr. Shaw: I sold some clay block, I did not make them, but shipped them in from Brazil. I did not have any trouble selling these block, but the contractor could not get any bricklayer to lay them. And for one house, we had to send away to get bricklayers to lay the block. These block went into a house which cost $6,000.00, the man was from Ohio and had used hollow block in that state, and decided he must have them in his new house. They were laid in the foundation and I guarantee that you can go around the house and find 25 joints where the mortar is very loose or has fallen out. We cannot sell them any more and as a result we went to making concrete block.

Mr. Hammerschmidt: I would like to know how many members here are making concrete block. Some of them are ashamed of it, but I wish they would hold up their hands. I can count seven.

President Stipes: Can you prove that you did not soak those block you have there with oil? (Laughter.)

Mr. Hammerschmidt: Yes I can. (Laughter.) There was no oil in those block and I will stand up and swear to that. I only brought those block down because I knew that my friend Laurer was going to be here. There was no oil in those block.

Mr. Blair: Would they take moisture?

Mr. Hammerschmidt: Every stone and every brick will take moisture.

President Stipes: It looks to me as though you had squared yourself, Mr. Hammerschmidt, in pretty good shape. The next in order is a paper by Prof. H. B. Fox, on the "Origin of Clays."

ORIGIN OF CLAYS.

By H. B. Fox, Urbana, Ill.

Mr. President and Gentlemen of the Convention:

Perhaps in beginning this subject it will be a good plan to first glance at the earth as a whole. Our planet is believed by most scientists to be a solid sphere but intensely heated in the interior. For our purpose, however, we need consider only a thin outer shell. We know this shell is made up of many different kinds of materials. We see, here, a mass of granite of other crystalline rock, there, thick layers of limestone or sandstone, at other places beds of clay, sand, or gravel, and usually covering all of these a layer of loose soil of greater or lesser thickness.

For the purpose of this paper, however, all of these different kinds of rocks may be divided into two groups: the crystalline rocks and the fragmental rocks. In the crystalline series we shall include all rocks that have come to their present condition by cooling from a melted mass or that have been so highly heated and subjected to such pressure and action of hot water that the whole mass has been metamorphosed and changed to silicates so far as its composition will permit. With the fragmental rocks we shall group all rocks, whether loose or compact that have been derived from the breaking down of pre-existing rocks by whatever process. The fragmental rocks form by far the greater portion of the earth's crust.

If, now, we examine the earth's makeup from without inward, we are able to make a new division of its mass. As we pass inward from the surface, the temperature is found to increase about 1 degree Farenheit for every 50 feet in depth. Again we find at a certain depth, varying for different places, that the rocks of whatever kind are constantly saturated with water. The upper or outer surface of this saturated layer is called the water table or upper surface of permanent ground water. Outside of this layer the amount of water in the rocks is variable and almost always more or less in motion. It is in this outer layer that most of the destructive agencies that are manufacturing clay are at work. The most important of these agencies are water, chemical agencies, change of temperature, and life. The action of water is both mechanical and chemical, but the chemical action we shall discuss with other chemical effects. Some of he results of the action of running water are easily seen. After a heavy shower the water of any stream in the neighborhood is found to be roily from the greater or less amount of fine rock materials being carried by the water, such as sand, silt, clay, etc. Clear running water has very little power in breaking down or wearing away the rock over which it flows, but when provided with a supply of rock debris like sand and gravel, its cutting power becomes very great. Examples of this power may be seen in numberless places but the best known and the most striking example is seen in the Grand Canyon of the Colorado where that not very large river has cut a gorge miles in width and thousands of feet in depth.

More important for our purpose, however, is the carrying power of running water. The carrying power of water varies greatly, varying with both the velocity and volume. Streams are capable of moving all kinds of materials from the finest clay particles to boulders weighing many tons. Not only has running water a transporting power but also exerts a sorting action. It has been demonstrated that the carrying power of a stream varies as the sixth power of its velocity. Thus if a stream having a given velocity is just capable of moving a stone weighing one pound and then the velocity should be doubled, it would be able to move stones not weighing two pounds but sixty-four pounds. It is seen from this that any slight increase or decrease in the velocity of a stream makes a very great difference in its carrying power. Since clay particles are usually very fine, they can be carried by rather slow flowing streams and hence are carried farther than the coarser materials and deposited by themselves forming beds of more or less pure clay. Most of our heavy deposits of clay, especially those of wide range such as our shales, were laid down either in the sea or some large inland body of water. This sorting action of running water is of extreme importance and by this means large beds of sediment of nearly the same degree of fineness are laid down, giving deposits of gravel, sand, clay, etc.

Because the lose material is carried away by the water, other destructive agencies are given a much better opportnuity to get at the rocks and to bring about further and more rapid decay. All rocks, no matter how compact and dense they may seem, are porous and capable of absorbing water. the amount taken in varying from a small fraction of 1 per cent. to 35 or 40 per cent. It is well known, also, that all rocks are more or less full of minute cracks so that when the water falls on the surface it sinks into these pores and cracks in many cases completely saturating the rock. As water freezes it expands about one-eleventh of its volume and in this way tends to pry the particles of rock apart. Many repeated freezings enlarge the cracks until finally large and small pieces are broken off which in turn are broken still finer by similar and other actions. Much of the rock thus broken up is carried away by running water and much of it ground very fine, adding to the sum total of our clay deposits.

Moving frozen water in the form of glaciers has also given rise to large amounts of clay. Most of us are aware of the fact that, during what is known as the glacial period, a large ice cap was formed over the northern portion of North America. This cap, which was formed by the unmelted portion of snow left over summer for a long succession of years, probably in many places reached thousands of feet in thickness. As the accumulation went on, the lower portions were pressed outward and the southern border began to move southward. The ice acting like a very stiff but still plastic substance, gathered up practically all of the loose material over which it passed, ground the smaller and softer rocks to an impalpable powder, rounded the larger masses into boulders, scraped, scoured and wore down the rock masses over which it passed, and carried all of this loose material with it southward, some of it for hundreds of miles, some of it for only short distances. In moving southward, the southern edge of the ice finally reached a region warm enough to completely melt the gradually thinning sheet. Of course, with the final melting of the ice, all material being carried by it was dropped. At the edge were built up long ridges or rounded hills forming what are known as glacial moraines. With the final retreat of the edge of the ice sheet northward, pausing now and then as it did to form moraines, there was laid down a continuous sheet of debris varying from just a few feet to hundreds of feet in thickness. In front of the edge of the melting ice, many lakes were formed with many streams flowing into them. These streams were constantly loaded with the finer sediment, and by means of the sorting action spoken of above, many deposits of nearly pure clay were formed. Large quantities of the finer materials, more or less mixed with pebbles, boulders, etc., left in the drift sheet, form our surface clays and are found serviceable for common brick and tile.

Added to the force of freezing and frozen water is the change of temperature from day to night. In some regions this change is slight but in others it is considerable. During the day while the sun is shining on the bare surfaces of the rocks, a thin layer on the outside becomes highly heated, while, because of the poor conductivity of stone, the layer beneath remains at about its original temperature. The expansion of the outer, heated layer sets up strains between this layer and the interior, causing chips sometimes weighing as much as 200 pounds to split off. This breaking up leaves the stone in shape to be more readily attacked by other agencies.

The materials broken down in various ways are frequently covered by growing vegetation whose roots are pushed downward into the soil. The roots are capable of taking certain things from the soil for the use of the plants, thus further breaking up the rock fragments, working it over and adding organic matter which exerts a further chemical action as mentioned later.

The rocks giving rise to the great mass of our clays are made up of a number of individual minerals. It is the breaking down of these minerals within the rock mass that produces the clay. The more the mass of rock is broken up so the weathering agencies can get at the separate minerals, the more rapidly does decay go on to the production of kaolin. The common minerals which by their decay produce kaolin are the aluminium silicates, feldspars. other minerals producing kaolin, but not so abundantly because they are themselves less plentiful, are mica, nepheline, lucite, andalusite; cyanite, epidote, scapolite, sillimanite, sodalite, topaz and zoisite. The breaking down of these individual minerals into clay is brought about largely by chemical action.

Water, as it is evaporated from the surfaces of oceans, lakes, rivers, etc., is practically pure, but as this moisture comes in contact with the gases of the atmosphere, is condensed and falls to the earth again, it is no longer pure but holds dissolved in it small quantities of oxygen, nitrogen, carbonic acid and other gases.

There is, then, no such thing as pure water at work on the rocks of the earth's crust. The main chemical forces at work in producing clay, then, are water solutions and gases. The results produced are mainly those of oxidation, reduction, hydration, carbonation and solution.

Whenever moisture falls to the surface of the earth, whether in the form of rain or snow, it carries with it considerable quantities of oxygen. Some of this gas is carried downward into the rocks with the water as it soaks in, and again, if the rocks are not completely filled with water, oxygen penetrates as a gas, also, so that there is always more or less oxygen coming in contact with the materials below the surface. If the oxygen comes in contact with organic matter, the latter is oxidized producing among other things humic acid, carbonic acid and water. Both of these acids are active and produce further action as mentioned later. Oxygen coming in contact with inorganic compounds changes many of the protoxides to sesquioxides. The only one that is of any practical value for our purpose, however, is the change from the ferrous to the ferric form of the iron in the rock forming minerals. Because of the great affinity of iron for oxygen, the coming of solutions containing oxygen or the moist gas itself in contact with minerals having ferrous iron in their compositions causes a chemical change to take place in many minerals. In the case of the silicates from which kaolin is produced, at the same time the iron is oxidized, hydration and carbonation usually take place, bringing about a more complete decomposition of the mineral. Probably the chemical reaction of widest extent going on in the rocks near the surface is that of hydration. Hydration is the union of water with chemical compounds such as minerals. Its effect is to increase the volume of the mineral and at the same time make it more susceptible to other alterations. Carbonation, as already mentioned, is the union of carbonic acid with bases, producing carbonates. Silicic acid, in spite of its great chemical activity at high temperatures, is the weakest of acids at ordinary temperatures, so that the silicates are readily broken down by carbonic acid which unites with some of the bases and results in the production of a new series of minerals.

Perhaps the best way to illustrate the effects of these chemical changes is to give the reactions that are supposed to take place in the breaking down of the common feldspars into kaolinite, which, of course, is the basis of all clays. According to Van Hise, they are as follows:

$2K\ Al\ Si_3O_8\ 2H_2O + CO_2 = H_4Al_2Si_2O_9 + 4SiO_2 + K_2CO_3$.

In this reaction Orthoclase feldspar, $KAlSi_3O_8$, is acted upon by water, H_2O, and carbon dioxide, CO_2, probably held in solution in the water and produces kaolin, $H_4Al_2\ Si_2O_8$, fine silica, SiO_2, and carbonate of potash, K_2CO_3. The K_2CO_3 being soluble in water, is probably carried away in solution, leaving the kaolinite and silica as a residue.

For Anocthoclase, $2NaAlSi_3O_8$, $KAlSi_3O_8$, and Albite $NaAlSi_3O_8$, the reactions are almost the same, and are probably as follows:

$2\ (2NaAlSi_2O_8KAlSi_2O_8) + 6H_2O + 3CO_2 = 3H_4Al_2Si_2O_9 + 12SiO_2 + K_2CO_3 + 2Na_2CO_3$, and $2NaAlSi_3O_8 + 2H_2O + CO_2 = H_4Al_2Si_2O_9 + Na_2CO_3$.

In the case of Anorthite, $CaAl_2Si_2O_8$, there are several reactions producing kaolinite as one of the resulting minerals. Two of these reactions are as follows:

1st. $4CaAl_2Si_2O_8 + 3H_2O = H_4Al_2Si_2O_9 + H_2Ca_4Al_6Si_6O_{26}$, in which the resulting minerals are kaolinite and zoisite, $H_2Ca_4Al_6Si_6O_{26}$, and

2nd. $4CaAl_2Si_2O_8 + Fe_2O_3 + 6H_2O = H_2Ca_4Al_4Fe_2Si_6O_{26} + H_4Al_2Si_2O_9 + 2Al\ (OH)_3$. In the second of these reactions besides the kaolin we have formed Epidote, $H_2Ca_4Al_4Fe_2Si_6O_{26}$, and Gibbsite $Al\ (OH)_3$. Both Zoisite and Epidote are themselves capable of breaking down into kaolin, calcite, sand, etc. Probably enough has been said to show in a general way how clay deposits are produced from crystalline rock and why the clays thus produced are frequently so impure.

Thus far little has been said of solvent power of water and water solutions on rocks and minerals. If we were to make an analysis of a sample of water from almost any well or spring we should find in it one or more of the common bases or acids such as lime, iron, magnesia, soda, potash, carbon dioxide, hydro-sulphuric acid, etc. Small amounts of these substances may have been carried into the ground by the water as it fell as rain, but by far the greater amount came from the rocks themselves by the dissolving action of the water; in fact, we know that all minerals of whatever kind are readily dissolved by the ground water passing over and through them. While this action is of considerable importance in the production of clays from crystalline rocks, it is of much greater importance in its action on limestones and in purifying clays already formed. We know from our analyses of limestones that many of them contain clay in their make-up. We also know that they are all laid down in more or less distinct layers and are broken into blocks of variable sizes by vertical jointing cracks. Water carrying carbon dioxide, CO2, in solution, readily finds its way through these stones by means of these cracks and bedding planes and exerts a strong dissolving action on the carbonate of lime, Ca CO3 of the stone. Carbon dioxide acting on the limestone produces the soluble bicarbonate, Ca CO3+CO2=Ca (CO3) 2, which is carried away in solution. As this action continues, the calcium carbonate of the limestone is finally all or nearly all carried away and the clay impurity concentrated until we often have a bed of very pure clay remaining. Some of our finest deposits of kaolin and fire clays are produced in this way. The action of water and water solutions containing acids from decaying organic matter and from the atmosphere frequently make considerable changes in the character of the clay even after the deposit is finally formed. Many impurities may be removed, others added, or those present gathered together. The gathering together of the iron into nodules of the oxide or sulphide (sulphur rock), the formation of deposits of calcite and gypsum, or the cementing of the clay into a more or less compact mass are due to this action of solution and deposition.

Prof. H. B. Fox, Urbana, Ill.

Finally, then, our clays are divided into two general groups. Those formed in the place in which they are now found, residual clays; and those that have been transported by water, wind, or ice from the place of origin. All of them, however, have come from the destruction of crystalline or fragmental rocks by chemical, mechanical or combined chemical and mechanical forces. (Applause.)

Following Prof. Fox's paper, Dean J. M. White of the University of Illinois delivered a lecture on "The Aesthetic Possibilities in the Use of Clay Products in Architecture," illustrated by stereopticon views following which Mr. S. S. Wyer, Columbus, Ohio, gave a lecture on "Producer Gas," which was also illustrated with stereopticon views.

FOURTH SESSION.

Thursday, 10.00 a. m. January 25.

President Stipes: Gentlemen, you will come to order. Mr. Morrow, of Whitehall, who was to give us a paper on "Modern Clay Manufacturing Plants" is not present and we will take up the next, which is a paper by Prof. I. O. Baker, director of the Civil Engineering Department of the University of Illinois, on "Advantages of Brick Pavements." (Applause.)

Prof. Baker: Mr. President and Gentlemen of the Convention. I am just a little embarassed because the paper which I have does not have the same heading as the title announced. Someway we slipped a cog and I suppose of course, you brickmakers are always ready to hear the question of brick pavements discussed, and I know that most of you know that I believe in brick pavements. If I had written on brick pavements I do not know whether I could have said anything new to you any more than I have already said. But I firmly believe that brick pavements have a very wide field, and surely for what we call small cities, is the only pavement that is available. I find that there is an item a little farther down on the program, where people who desire to do so, can air their views about the merits of brick pavements in comparison of other pavements. I was in court once when we were hearing objections to a pavement that had been ordered and the lawyers asked the question as to what kind of pavement would give the best service, etc., and the cost of the pavement, and it occurred to me at that time that it would be well to carefully state the advantages of a pavement, that the public might understand the advantages, that the property holder might better understand the merits of the different pavements and what the cost to the propetry holder would be. With that object in mind, I have prepared this paper. We have members in this Association, who are interested in promoting the construction of pavements, and it is natural that you would be the most interested in promoting the construction, but the proposition is that there are other features which should receive attention.

BENEFITS OF PAVEMENTS.

By Ira O. Baker, Professor of Civil Engineering, University of Illinois, Champaign; Author of a Treatise on Roads and Pavements.

The writer was present once in court when testimony was being taken for and against the construction of a particular pavement, and was greatly surprised at the seemingly imperfect comprehension by both the attorneys and presumably expert witnesses of the available arguments. As far as the writer has observed, there is no discussion of this subject in print, except a brief article by the writer of this. Doubtless a considerable number of the members of this association are interested in the extension of pavements, and may therefore be interested in a general statement of the benefits to be derived from pavements. The effect of pavements upon city life is so important that no enumeration is likely to include all of the benefits; but nevertheless it may be of value to enumerate some of the more important of the benefits resulting from the construction of pavements. Further, since the chief, if not the sole, objection to a pavement is its cost or the manner of assessing this cost, we will in considering the benefits, also incidentally inquire how each particular benefit affects the equitable distribution of the cost. We will first consider those benefits which chiefly accrue to the abutting property, and later those accruing chiefly to the city at large.

BENEFITS OF PAVEMENTS.

1. A pavement establishes a permanent grade, which is a matter of importance to the abutting property when other improvements are to be made. Of course, the objector can claim that a grade can be officially established before the construction of any pavement is even contemplated; but it is sufficient to answer that it is seldom, if ever, done, and further that in some cases at least the grade should not be established until the kind of pavement has been decided upon. The benefit of an established grade accrues wholly to the abutting property.

2. A pavement adds to the appearance of the street by giving a uniform surface instead of the irregular one of an unpaved street. Citizens spend money to improve the exterior appearance of their houses and to beautify their lawns; and why not also spend something to improve the appearance of the street in front of the property? A lot facing good houses and well-kept lawns always sells for more than one having a less pleasing outlook, and a good pavement improves the outlook of any property. However, the writer is not trying to prove that this elements of value exists, but is trying to show that the pavement creates a part of this value. This benefit accrues chiefly or wholly to the abutting property.

3. A pavement increases cleanliness, since a paved street is less dusty in a dry time and less muddy in a wet time than an unpaved street. Of course, an illy-kept pavement is untidy, but even then a paved street is always more cleanly than an unpaved one; and further, a pavement may be kept perfectly clean, while an unpaved street can not be kept clean under the most favorable conditions and with the utmost care. This benefit accrues wholly to the abutting property.

4. A pavement increases the healthfulness of the neighborhood by preventing holes filled with mud and filth. Since the recognition of the mosquito as an agent in the dissemination of contagion, this is, in some localities at least, an important consideration. This benefit obtains chiefly to the abutting property, but it also extends to the entire neighborhood and possibly to the whole city.

5. Pavements, or rather good pavements, lessen the tractive power and decrease the cost of transportation, either by increasing the size of the load or by decreasing the time required for a trip. This benefit accrues chiefly, or rather directly, to those using the pavements; but in the long run it will through the effect of competition be distributed to those residing on the abutting property, and also to those residing in the neighborhood of the pavement, and even to the whole city, for a decrease in the cost of doing business benefits the whole city.

6. Pavements increase fire protection by facilitating the transportation of fire apparatus. This benefit may at any time save to an abutting property holder the entire cost of his pavement, and this benefit may even reach to adjacent unpaved streets.

7. Pavements permit pleasure driving at all seasons of the year, and facilitate social intercourse. This may be regarded as one of the luxuries of a pavement, and its importance will be valued very differently by different people, according to their appreciation of luxuries or their ability to pay for them.

8. Pavements allow the use of bicycles, which furnish cheap transportation and healthful recreation to many. In a few cities at least bicycle paths have been constructed on the sides of unpaved streets, which shows that the bicycle travel was sufficient to justify a considerable expense for its accommodation.

It is impossible to assign a money value to each of the preceding eight benefits of pavements, for each will vary with the local situation and with the judgment and the financial ability of each individual. Many affairs in life are too complicated to be expressed in arithmetical terms, and the benefit to accrue from the construction of a pavement is certainly one of them. There is one thing in this connection that is frequetly overlooked, viz.: that the benefits of a pavement are enjoyed every day for several years—at least during the life of the pavement—while the payment is made on only one day annually for five or ten years.

In discussions of this character, more particularly those relating to the advantages of hard roads, it is frequently assumed that the consequent increase in the value of the abutting property is to be counted as one of the benefits of the improvement; but the real fact is that the increase in value is only the measure of difference between the benefits and the damages due to the improvement, and therefore ought not to be included with the others as one of the benefits. Further, the increase in value of the property is of no advantage, unless it is to be sold. There is a certain satisfaction in knowing that the house in which we live has increased in value since we built it, but when the tax assessor comes around, we are not so ready to congratulate ourselves upon the advance in price of our property.

DISADVANTAGES OF PAVEMENTS.

It is usual to think that the only disadvantage of a pavement is its cost, but a moment's reflection will show that there are some other real disadvantages. This being the case, it is the part of wisdom and also good business policy to give them consideration. Except cost, there are but two objections to pavements, noise and dust.

The paving of a particular street may attract travel from adjacent unpaved streets, and thus convert a comparatively clean and quiet street into a decidedly noisy and dirty thoroughfare, in which case it is conceivable that the pavement might be of more detriment than benefit to the abutting property. Doubtless this is an extreme case, but nevertheless it does sometimes occur, and the failure to recognize the condition has caused confusion and increased the difficulties of securing the pavement.

APPORTIONMENT OF THE COST.

There is much discussion as to who in equity should bear the cost of the pavement. There are three distinct views.

1. A few claim that as they own neither a horse nor a vehicle and do not use the pavement, they should not be required to pay for it. Although a resident may not travel upon the pavement, it is used by those who serve him; and a pavement confers other benefits besides those relating to transportation, as has been stated. As a matter of administration, it is entirely impracticable to distribute the expense according to the use made of the pavement.

2. Others claim that the pavement is for the benefit of the general public of the city at large, and hence the abutting property should pay no more than that in other parts of the city. This claim ignores the fact that the abutting property secures a distinct benefit for which it should be required to pay. Laying at least part of the costs upon the property tends to discourage a demand for lavish expenditures for unnecessary improvements, that possibly might be insisted upon if the city contributed the entire cost.

3. Many hold that the benefits accrue only to the abutting property, and that therefore the owner of the abutting property should bear the entire cost. This claim disregards the fact that the pavement is for the use of the general public, and that it benefits all the people and all those having business interests in the city. An improvement in any part of the city is an indirect benefit to the city as a whole. In excuse of this method of assessing the cost, it is sometimes claimed that, although the pavement confers a general benefit, the inequality will be compensated when all the streets are paved. The answer is that all the streets may never be paved, and besides traffic naturally concentrates on certain lines and nearly ignores certain others, and therefore some pavements will require much more care and expense than others. Further, there should be no objection to letting every property holder pay a part of his ultimate share as the work progresses, instead of paying it in a lump sum when the street in front of his own property is paved.

Usually either the second or third method or a combination of them obtains; that is to say, the entire cost of the pavement is assessed against the city at large or wholly against the abutting property, or the cost is divided between these two: apparently the latter is the more equitable. As a rule the eastern and southern cities pay a larger proportion of the cost of pavements than do the western. This difference in practice is probably due chiefly to the limited revenues of new cities and to the many demands upon the general tax for the numerous and varied necessities of rapidly growing municipalities: consequently the cost of pavements, improvements having a definite local benefit, have been charged to abutting property. It is equitable and just that the cost should be borne jointly by the private property and the city at large, since then the cost falls upon both interests which directly profit by the improvement, and neither receive a substantial benefit without sharing in its cost.

Ordinarily the proportion of the expense to be borne by the municipality and by the private property is determined wholly by financial considerations or usage, and is made uniform over the entire city; while equity and justice demand that a distinction should be made depending upon the character of the traffic. The interests of the general public in a street vary greatly between a resident street, a business street, and a general thoroughfare. To pave the first the public should pay only a small share, say, 20 or 30 per cent; for the second, say, 40 or 50 per cent; and for the third 60 or 75 per cent. Some such variation in the proportion to be borne by the two interests finds further justification in the fact that if the street becomes a general thoroughfare, some of the benefits usually assumed as accruing to the abutting property may be nullified by the noise and dirt, as previously explained.

The preceding somewhat elementary principles have been presented with the belief that a clear understanding of them by those seeking to promote paving improvements will facilitate the work and aid in securing equity and justice. Of course, it is useless to expect that in such matters there will be no opposition, or conflict of opinion, or diversity of interest; but a fair recognition of the principles involved is necessary to an equitaable adjustment.

Discussion.

President Stipes: This paper is open for discussion and we would be glad to hear from Dr. Converse.

Dr. Converse: I don't like to have Prof. Baker think that this paper was not worthy of discussion, but I want to say to him, that this is the fairest presentation of the paving question that I have ever heard. It is the fairest to all concerned. I am not sure but that he should have been a lawyer, instead of an engineer. He has covered all points well from every standpoint and not from a prejudiced standpoint. Anyone who will carefully read that paper, can certainly reach the conclusion as to what is right and proper in regard to the laying of pavements and the benefits to be derived therefrom. I do not know any features that I am disposed to criticise. I was pleased with the argument and pleased with the fairness and it looks to me that anyone who is disposed not to be public spirited, that if he gets the views of that paper and sees what his obligations and privileges were, he would not have anything more to say.

Mr. Morey: In regard to the paper, I think myself, it is about as fair an exposition as I have ever heard. People when the paving question comes up, generally misunderstand these things so the property owner who is to be benefited and the public have all kinds of objections to offer, and I think this paper makes it clear as to what is fair and equal to everybody.

Prof. A. N. Talbot: I might add to this, and I think it is a topic on which the brick manufacturers ought to be better versed when they go before the public—the real foundations for pavement assessment. There is a difference in the cities of the middle West and those of the East and South in the distribution of the cost of pavements, between the city and the abutting property owners and that difference is the requirements of the cities of the middle West. They make a limitation in the amount of taxes that can be raised for such purposes and in the amount of bonds or other indemnities which the cities may have, which don't come in the older cities of the East and South and that results in special assessment methods here in the middle West, as the only means of securing such improvements, as the cities want. So far as the matter of benefit is concerned the Courts have practically ruled that the increased net value of the property is a practical measure of the benfits is more than the cost of the assessment. While this may not be so in some cases, yet it comes back to that in their treatment of these cases so that it is quite desirable in the presentation in these matters before the Court to show that there has been this benefit in the value of the property. The ordinary custom of the lawyers is to get a lot of people and residents to say these pavements are not of the least benefit to the property for the purpose of levying the assessments, and the Courts ought to permit the giving of the real reasons for the construction of these pavements, such as has been given you this morning by Prof. Baker. I remember being on the witness stand in such a case once, when the attorney had told me that they would not allow me to give any reasons why this property was benefitted, so he did not ask me that on the examination. I did, however, give the improvement which I thought would improve this property, and the next question on the cross-examination was how I came to base that conclusion, and I told them I based it upon the increased value due to the pavement and I started to tell some of the things which have been told in this paper, and I was stopped by the attorney, who told me that I had answered the question and finally I appealed to the Court for the right to complete my answer and then after a little discussion between the lawyers, the Court ruled that I had a right to complete that answer and I did go ahead and give the reasons why I thought this property would have an increased valuation due to this improvement and it seems to me that we ought to be permitted to do that in such a case as this. Perhaps one other advantage which might be given and that is, that the construction of a pavement does tend to fix the character of the street. Almost without exception when the improvement of a street is completed the street will continue to improve. (Applause.)

Dr. Converse: I want to repeat a thought which came to me while the Professor was speaking. I am sure Prof. Baker alluded to it, that is, the value which comes to every property on a properly laid pavement; it is something, I think ofttimes neglected. I believe that value is equal of the cost of the pavement and you may think it is a little out of the way, when I suggest that it is the aesthetic effect of our paved streets. The elder Vanderbilt, before he died, got it into his head that his men were spending a great deal of unnecessary time in polishing up the brass on their engines, and the result was that he had a lot of new engines turned out all in black paint with all the same capabilities for service that the others had, and he said he soon found out his mistake. He said the engineer wanted an engine in which he can take some pride. Now, gentlemen, pride may be something which a great many people ignore, but I want to tell you that we all have a great deal of it. The man or woman that has a degree of pride takes a better care of their bodies, there is no mistake about it. The men and women who have a great deal of pride take better care and have better surroundings, better houses, and these houses are better cared for, and the result is that they are so much better cared for, that it is really money in their pockets. You give a man an old plug of a horse and he will get all the good he can out of him without undertaking to make his coat shine, but give him a good horse and he will get more service out of that horse and put more care on it, and you will get more service out of the man, too. Prof. Baker alluded to it to a degree in the permanency of the street. You put a new street pavement on a street which has had no pavement and I will venture to say that there will be fifty per cent. more fixing up of the houses in the way of paint decorations, and while they are fixing up you will see the house is being fixed up on the inside, and with that improvement you will see the children are better cared for and better educated and there is no telling where the influence is going to stop. It is one of the little things which is looked upon as a luxury. We have but one life to live and these little things of polishing up leads from one thing to another and are the things which add to life and make life more interesting. (Applause.)

Prof. Ira O. Baker, Urbana, Ill.

Mr. Roberts: If a man wants to build a home, nine times out of ten he wants to get on a good pavement, you cannot give him a lot away from it. In the small cities, the whole thing is in getting the first three or four squares of pavement in and after they see the benefit of it they put down several miles of it. This is the case in towns of ten thousand inhabitants. This is the case with the gravel roads in many counties. The farmers will fight them, but after they go through, I don't believe there would be a cross-road in a county that is not ready to take up the paving question and they never want to stop it, and the good work goes right on. (Applause.)

President Stipes: Unfortunately neither Brother Blair nor Brother Butterworth is with us this morning. Most of the paving brick men have got away. The next thing is a general discussion of paving brick vs. asphalt. There is a chance for every one of you to advocate your pavng brick. Mr. Barr, how about it, are you going to take the brick side?

Mr. Barr: I don't see anybody here who I think is likely to take the asphalt side, and I presume I ought to, but I don't know how, so I won't attempt it. (Laughter.)

Prof. Baker: I don't know whether I can talk on this topic or not. I haven't any speech in my pocket this time. I have considered this question a number of times, because I get a considerable number of letters, asking the relative merits of these two pavements, and I try to answer them. Naturally, these questions come from the smaller cities. I have generally answered that brick was a great deal better for a street in a small city than asphalt, partly because brick pavements or a large part of the construction of the pavement, could be done by unskilled labor, residing in that city, and partly because brick is more permanent and more durable and because asphalt is unsuited for small cities. An unpaved street or a paved street in a city is likely to be flanked and connected with unpaved streets. In most of our unpaved cities the mud is likely to be drawn up on the paved street to a considerable extent and the pavements will not always clean easily and it will almost surely result that the pavement will be covered for a number of feet with mud. Any of you who know anything about asphalt know that water or mud is very deletrious to asphalt, and causes it to rot, and for that reason asphalt is particularly unsuited for pavements in small cities. Further, it seems to me between the large city and small city there is a decided disadvantage against asphalt, in that asphalt must be frequently repaired and to repair it requires skilled men with a somewhat elaborate outfit, and in a small city there is little likelihood of being enough asphalt pavement to warrant the establishment of an outfit or employ skilled labor to care for it. Consequently if a small portion of asphalt pavements were to be laid in a city, it would rapidly deteriorate for a lack of repair, such as it would have in a larger city. These two reasons are quite important as in favor of brick against asphalt in small cities. When it comes to a question of cost, that is a matter which can hardly be discussed in general, for though I think it can be said that almost any city in Illinois brick pavement will cost less per square yard than the companies laying asphalt are likely to charge, I do not know that I know or you know what a fair cost for asphalt pavement is, and we can only judge from the prices they do charge. Sometimes, it is true, for the sake of getting asphalt in a city they will put it down very cheaply, but as a rule, the price for asphalt in small cities and in large cities is more than for brick, and after it is laid it will deteriorate, and there is a decided advantage in favor of brick, for even considerably sized towns. (Applause.)

Mr. Mamer: I am not interested directly in brick pavements, but I am interested in paving. When I was in Buffalo during the Exposition there, I had heard so much about that city being the best paved city in the United States that I took good care to see the pavements, and they had the worst asphalt pavements I ever saw. You take some of the Southern cities, Houston, San Antonio, etc., and in these places the asphalt pavements seem to stand much better. Whether it is because there isn't any frost down there I do not know. Have you made any experiments in any way to discover whether the frost would destroy asphalt?

Prof. Baker: When you come to compare paving, you must take into account climatic conditions, the care it receives and the amount of traffic and the care used in laying it. I might have said further when I was on my feet before that a brick pavement is better than an asphalt pavement, in that even the layman can tell more nearly whether a brick pavement is well laid, well made and suitable for a pavement, while there is scarcely anybody except those employed by the companies laying asphalt pavements can tell whether it is laid properly. There is one sort of a mixture prepared for the Northern cities and another for the Southern cities, and a difference in the degrees to which it is heated. But this heat depends upon the preparation and nobody can tell that unless he has a very fine thermometer and makes a scientific test, so the layman cannot tell whether it is properly laid, and very often the men who lay it cannot. The difference between the pavements the gentleman referred to was probably due to the difference in laying.

President Stipes: I guess it is safe to assume that the brick pavement has the best end of this argument. The next question for general discussion is "What is the best method of laying brick at street intersections?" Prof. Talbot or Prof. Baker ought to be able to tell us that.

Prof. Baker: Mr. Talbot says he don't know, so I guess I ought to keep still. I did not suppose there was much argument about the street intersections. To carry the traffic between the street, we put the brick perpendicular to the length of the street, so the traffic would go across the brick. The most satisfactory way is to have the brick run herring bone to the center of the intersection and that distributes the traffic that goes around the corner, the other way of the street. It might happen that one street comes into another at the intersection and not at the cross, and then perhaps one one-half should have the herring bone. I have seen it done that way and it is the correct way.

Dr. Converse: I have never seen an intersection of a street where two streets cross that would give out before either end of the street does and the intersection gets twice the traffic that either end of the street gets. I have watched this in our own city, brick that have been put down from our own factory, in which I was specially interested of course, and I have come to the conclusion myself that we have always laid diagonally and got better work. I would rather take my chances on a brick laid diagonally on the street for ordinary purposes than one just laid straight across. There would be less chipping of the edges; there would be less breaking under the wheels or the dorses' feet, and so I am thoroughly satisfied on account of the durability shown at the intersection, that it would be better were the whole street laid diagonally. I would like to see that point brought up. Of course there is no other way to lay them at the crossing.

Mr. Gates: My observation has led me to believe that the best method of laying brick at intersections is that known as herring bone, as in that way the wagon cannot cross any intersection without being at one time on more than one brick. If diagonally laid, then wagons drawn close to the corners would practically give nearly the conditions you get in the middle of the block, but for the admitting of turning from one street to another they will go with the length of the brick. I will take exception to what Prof. Baker said about laying two quarter herring bone and the other half straight. That makes a joint lengthwise of the street in the center, that is very hard to lay. It requires more or less chipping of the brick to fit at the end and it comes in the center of the street where it is particularly likely to be in a bad shape in a short time.

Mr. Barr: We have a number of streets in our town laid in the manner the Doctor describes, the laying of the brick at an angle of 45 degrees. I have seen quite a number of streets the same way, laid a number of years, with small sized brick, eight inches long, and I have noticed that in laying them at an angle of 45 degrees, that in breaking joints, that they can be laid closer together. If run lengthwise of the street it is inclined to wear across at the end of these brick and you don't get the benefit of the joint as you do when you lay them across the street. I know one case where they have gone to the other extreme. Racine, Wis., has laid several blocks lengthwise of the street instead of cross-wise. I don't know what the result will be.

Prof. Baker: I am like the gentleman who said he had not been in the business long enough to see a good brick street properly laid, wear out. Ten or twelve years is such a short time in the life of a brick pavement that you cannot tell how long it will last. (Applause.)

President Stipes: The next question is, "What is the Best Filler for Brick Pavements?" Now if Mr. Blair was only here, he would certainly tell us.

Several members: Cement is the best filler.

President Stipes: That seems to be unanimous. The next question is, "Using Cement as a Filler, What Should be Used for Expansion Joints; What Distance Apart and How Thick?"

Mr. Stipes, Jr.: I would like to refer back to the best filler for pavements. I want to ask a question. Is it best to use cement as a filler? Would it be profitable without having expansion joints?

Dr. Converse: I may say right here that the brick paving men had a little meeting since they came here and they were all anxious to know as to what gave the best results. Most of the streets have been laid with sand filler in Springfield, and you have heard the old saying, that there are a lot of people who haven't enough sense to pound sand in a rat hole, but we have had Mayors who have had just sense enough to wash all of the sand out between our brick, with not less than 25 pounds of pressure and a small nozzle hose, and the result is, that in our principle streets there is nothing between the brick except mud and horse manure. I have tried to convince our Mayors that they are making a mistake, but the last one is so pig-headed that I cannot convince him, and the result is that they go right on washing out that filler, that I will be glad to see anything used as a filler that cannot be washed out, as I believe that is more injurious to the street than anything else. I believe that one washing of that kind is worse than three months' wear on the pavement. I have tried to convince them, but they think I am afraid our brick won't stand water soaking. If it was not for this flushing of the streets, I would think you could not get any better filler than a good sharp sand. If the street could be swept and properly washed off with a large mouthed hose, held at a low angle I would take chances on that. Last year we put down a street with an asphalt filler and they expected considerable from it, but they have taken to washing it and I do not expect much. I think it was as poorly done as anything I have ever seen, but it is going to be better than sand. We wish we did know what is best. I think cement is not sufficiently elastic and you are getting too much noise, but it is giving service and there is no question about that. If these engineers know, I wish they would tell us as to what is best to be done. An ordinary sand filler will not stand the kind of washing that some of these men, that are elected Mayors from banks or dry goods stores, are disposed to give them.

Mr. Randall: Mr. Stipes asked for information and I believe Prof. Talbot or Prof. Baker can give it. I believe more brick pavements have been laid with cement filler and without expansion joints, than with it. A cement filler pavement without expansion joint is a good pavement, but you run the risk of having a noisy pavement. I believe if the gentlemen will read the Standard Specification adopted by the National Association, he will get the information as nearly as it can be given.

Prof. Talbot: I believe I am changing my opinion a little about the advantages of cement fillers. I formerly thought that for almost all circumstances the sand filler was good enough. I am getting to the conclusion that it is not; we ought to have some other form of filler, and surely the cement filler when properly put in, does add to the life of a pavement and pays for the cost many times over. I think the brick men are uncertain as to whether the cement filler in its present form or whether some other combination might not be made. It strikes me that there is an opportunity for some experimental work which might result to great benefit for our brick pavements.

President Stipes: We have one paper which was not read yesterday. "The Requirements of a Modern Tile Plant," by J. M. Powell, Brooklyn, Ind.

REQUIREMENTS OF A MODERN DRAIN TILE PLANT.

J. M. POWELL, Brooklyn, Ind.

Mr. President, Gentlemen of the Convention:

I recently received a letter from your worthy secretary advising me that the executive committee of the Illinois Clayworkers' Association had concluded to put my name on the program for a paper entitled, "The Requirements of a Modern Drain Tile Plant." I was surprised at the conclusion of the committee and felt a little sorry for the secretary, knowing that he is held responsible for all mistakes, but I trust you will not censure him for this one.

The secretary further states that he had often heard of the modern plant recently completed at Brooklyn, Indiana, by the Indiana Drain Tile Company, and also that he would like to hear more of it. Therefore I understand that I am merely to tell you something of the plant and manner of operating it.

THE REQUIREMENTS OF A MODERN DRAIN TILE PLANT.

First: The first requirement is a good clay or shale; I say good because good tile like good brick, are made from good material. The shale or clay bank should be one that is thoroughly adapted to the material to be manufactured, whether it be tile, sewer pipe or brick. The clay most suitable for drain tile is one that will burn very red and yet be very hard and tough without discoloration caused from hard burning or other conditions in the kiln that makes a non-uniform appearance to the tile. Red tile are generally liked best. A good drain tile clay should be one that shrinks as little as possible in drying and burning, as tile made from clay with little shrinkage will not crack in drying, will hold their shape better in burning and always remain rounder than those that shrink more. The clay that we are using at Brooklyn shrinks less than five-eighths of an inch to the foot when burned to partial vitrification. Further, a good shale bank is one that is uniform throughout in texture, each strata burning about the same color with an even shrinkage, also one that lies above the water level and that can be drained without pumping. A good clay or shale bank is not easily found. If you should start to find a good clay bank and shoould succeed in finding one that you think would do, when you attempt to buy it and the owner finds that you want to build a tile or brick plant, that particular piece of land usually becomes very valuable, notwithstanding it may be listed for taxation at Ten Dollars ($10.00) per acre.

Second: The cheapest and best way of digging and hauling the clay to the plant.

Shales are usually dug by blasting, then shovelled into the car, and although this is probably the cheapest in small plants, the steam shovels are preferable where the quantity of clay used will justify its operation. The clay may be hauled in cars pulled by a winding drum and wire cable, but I think an electric haulage would be preferable at plants where power may be had and where the grade is not too great, the car may be started from the bank by simply setting it in motion and traveling the distance to the plant and back again without an attendant, except to dump the car, thus saving the expense of a man to operate the winding drum.

Third: The clay car should enter the building at the second story so as to have it as far above the dry pan as possible, and should be arranged to dump either to right or left. The clay bin should be at least 16x20x12 feet. Through the center of the clay bin, and just beneath the floor, place a belt conveyor, across which lay a false floor of loose boards; by removing these boards when the bin is full or partly so, the clay will roll to the elevator by its own weight, the elevator carrying it to the dry pan. With this arrangement one man can grind as much clay as three men could shovel. Then the work is easy for him and he is always better satisfied. A satisfied employe is always the best man.

Fourth: From the dry pan the clay is elevated in a bucket elevator to the top of the third floor and there passed to some good screen. The clay should be screened fine for drain tile. From the screen the clay should fall into a large storage bin something like 16x30x15 feet. A bin of this size will hold clay enough for two or more days run. It pays to have plenty of clay in the shed for a rainy day. Beneath the floor of this bin may be placed a heavy sprocket chain driven from the lower end of the bucket elevator, so that when the elevator stops, the chain will stop. The purpose of this chain is to drag the ground clay into the elevator boot. A false floor is layed over the trough in which this sprocket chain runs. By removing portions of this false floor, the clay flows onto the sprocket chain and is carried to the elevator, and will require but little attention. One of the advantages of this plan is that of using a gate, which gauges the stream of clay to the required amount.

Chas. Burridge, Tecumseh, Mich.

Fifth: The clay next passes to the pug mill. This is an important stage of the manufacture. The pug mill should be large and heavy so that the clay may be thoroughly and uniformly mixed. The pug mill should be located on the third floor so that the prepared clay can be passed through chutes to the tile mill or steam press, as it is best to make the larger size tile on a press. The chutes should be so arranged that the press and mill can be run at the same time or separately. This may be done by a little gate or switch at the end of the pug mill. It is best to buy the heaviest and best machinery that it is possible to get as the best is none too good.

Sixth: A steam boiler and engine should be of the best, as well as all other machinery and appliances that are used.

Seventh: The tile should be handled as little as possible while in their green state. Therefore, we have arranged to dry our tile on cars and tunnel dryers. The cars are 4x8 feet. The tile are set on the cars two deep, the large tile being one length set on pallets. The dryer cars are carried on a transfer car to the tunnel dryer and pass through the dryer in two days, which will dry them thoroughly. From here the cars are again placed on a transfer car and carried to a track that leads to the entrance of each kiln. From here they are carried by a special truck to the interior and the dry tile are set in the kiln and the dryer cars return again to the press. We cannot say that this plan is particularly new or modern, it having been borrowed from the brickmaker, but it does save two handlings of the tile just at a time when they are most liable to damage.

Eighth: As to the kilns, there are many kinds in use, a round down-draft being the most used. We are using the Youngren Continuous kiln, having twelve chambers 16x30 and set out tile 12 feet high. Some of the advantages of the continuous kiln are, first, that the fuel is used at one place. The coal is wheeled and dumped into the gas producer, which is located at one end of the kiln, and here it is made into gas and carried by a flue to all the twelve chambers and admitted into them as required. It is very easy to operate. The gas is under perfect control of the firemen. The kiln is so built that the whole fire line is always in view. The kiln is entirely covered by roof, also the settling and draining gang are under shelter while at work. While the first cost of the kiln is more, it is a greater pleasure to have the plant neat and compact where it can always be kept clean, being no coal and cinders except at the one place, namely, the producer. Then it is possible to have good concrete runs over which the tile may be carried to the cars. The continuous kiln may not be so modern, as I am told it has been in use for many years in Europe, but in this country it is comparatively new. However, I think it is here to stay, for it burns the wear all right, more uniformly than any other kiln that I have ever seen. As before stated the first cost is of course, considerably more but there is a saving in fuel and easier to operate, cleaner and more compact. When we began building this plant and it became known that we were to build the continuous kiln, some said, "Now, Powell, look out." Others said that they would rather it was us than they, others told tittle stories of some adventurous men and how they failed, others wanted to know if it had ever been tried for tile. But we proceeded to build both the kiln and the tunnel dryer and we are not sorry.

Ninth: We do not claim that our plant is particularly new or modern, but one thing we have tried to build it of the best material and as near fire-proof as possible. We have also sought to make every move count, that is to start the tile when made toward the market, keep it moving in that direction and yet handle it the fewest number of times and carry it the shortest distance. This we have accomplished in a large measure.

Gentlemen, I thank you. (Applause.)

President Stipes: If there is no discussion on this question we will now hear the report on the Committee on Resolutions, which Mr. Mamer as chairman will read.

REPORT OF THE COMMITTEE ON RESOLUTIONS.

WHEREAS, This year it has been demonstrated that circumstances may conspire to prevent the holding of our convention at the time provided for in our by-laws, therefore be it

RESOLVED, That such by-laws be hereby rescinded, and that hereafter we meet at the call of the executive committee.

WHEREAS, The funds of the association do not warrant the expense of an official report, therefore be it

RESOLVED, That the motion providing for an annual stenographic report of our proceedings by Miss A. Wallace be rescinded, and that hereafter the report be left to the ceedings by Miss A. M. Wallace be rescinded. Journals.

WHEREAS, The 28th Annual convention of this Association has again met in Champaign with a twenty per cent. increase of membership, and

WHEREAS, There is a marked improvement in the quality of the work done by this convention which will result in great benefits to the clayworkers of the state, and

WHEREAS, The hospitality enjoyed by us exceeded even that of last year, therefore be it

RESOLVED, That the thanks of this Association be accorded to our hosts of Champaign and Urbana, who have contributed so much to our mental development and enjoyment and our physical welfare. Among these we mention prominently the professors of the University whose labors in our behalf we appreclate more and more each year.

Resolved, That we convey our sense of appreciation to C. B. Hatch, "Mine host of the Beardsley," for his general good will toward the Association, his well ordered banquet and his splendid orchestra as provided especially for our benefit and enjoyment.

Resolved, That we sincerely appreciate the splendid work of our officers during the past year, culminating in this record breaking convention.

Whereas, The Illinois Clayworkers' Association recognize the value to the Agriculturists of the State of Illinois resulting from the school of special training during the mid-winter session for farmers, and

Whereas, This Association believes the same benefits would result to the Clayworkers of Illinois if a like mid-winter session could be held at the University in which special instructions could be given beneficial to our industry, therefore be it

Resolved, That the Trustees of the Illinois State University are hereby respectively requested to open a school of special instructions in ceramics, and that the same be held during the two weeks proceeding the meeting of the Illinois Clayworkers' Association.

Whereas, The General Assembly of Illinois has provided for special insructions in Ceramics at the University of Illinois, and,

Whereas, The University Trustees have provided for free tuition for one student from each county in the State, the same to be nominated by the Illinois Clayworkers' Association.

Whereas, The said Association meets but once a year, and will not have the opportunity at that meeting to make a proper selection at that meeting for such nominations, therefore, be it

Resolved, That the President and Secretary of this Association are hereby empowered to make the examination for free tuition in the Ceramic Department of the Illinois State University providing that said President and Secretary shall be governed in this nomination by recommendations from members of this Association in their respective counties, so far as practicable, and when not practicable on account of any county not having members in this Association, the President and Secretary shall make the nominations from the best source of information possible.

Resolved, That this Association desires to express its deep sense of obligation to the members of the legislative committee, also Prof. C. W. Rolfe, for their untiring efforts and self-sacrifice shown in their work of securing the passage of the bill which gave to Illinois a Clayworking School.

J. M. Mamer,
Harry de Joannis,
H. E. Shaw,
Committee on Resolutions.

Mr. Mamer: I move the adoption of the Resolutions.

Mr. Randall: I second this motion to adopt the resolutions, and in doing so, I wish to say a word. I think there has been some misapprehension in the matter of allowance made Miss Wallace for the stenographic report. We never asked for an allowance; the suggestion was made by your former secretary, who desired to have the report for use for his records. Neither Miss Wallace nor myself asked for anything of the sort, and last year when there was some question about it, had a similar resolution been introduced, I should have favored it, if it was the wish of the Association, but I did object to an official of this organization doing what the organization itself had not authorized. He was violating the express order of the organization. I do not object to the discontinuance of the payment to the stenographer, that money went to the stenographer herself; not a penny of it ever went to anyone else. I want the members to understand the real situation. It was the unbusinesslike way in which the matter was handled to which I objected, and it was for this same reason that I insisted on the introduction of the first resolution. This organization had a fixed time or date of meeting and the officers of this Association had no authority to change that date. Personally, the change was a matter of convenience to me; it enabled me to go to Iowa and attend the Des Moines meeting, which I could not have done had this meeting been called at the regular time, but this organization should be governed by its by-laws, and it is not good business policy for the officers to take things of this sort into their own hands.

President Stipes: Before putting this question, I want to say just a word in behalf of the Executive Committee. We had a little difficulty in regard to the time of the convention. We were a little bit slow, I expect, about getting out our announcements, and the Iowa people run in ahead of us and took the date we should have had, and as Mr. Randall has said, it would have been a little inconvenient for the clay journals to attend both meetings at the same time, so we thought if we would change it to the following week. After consultation, the committee decided we would come back to Champaign and as I have stated, we run onto the time of the Iowa convention and we thought if we would set it the following week, it would give the clay journals and the machine men an opportunity to come from there here and in that way we would get a better crowd. Then we found we could not get the hall. I myself did not know that we had a fixed date, and so we decided on this week. When I finally found out about the by-laws it was too late to change the date. I am very glad it has turned out all right and I am glad it was an accommodation to Brother Randall and the other boys and I hope you will not scold us too much for it. The motion now is on the adoption of the resolutions.

E. R. Frazier, Chicago, Ill.

Motion carried.

President Stipes: The next is the report of the Secretary and Treasurer, which seems to be in one.

Mr. Hammerschmidt: The report is as follows:

Balance on hand Jan. 10, 1905	$56.33
Membership fees reported later	7.00
Fees collected in 1906, so far	124.00
Total	187.33
Expenses as per vouchers	119.46
Balance on hand Jan. 25, 1906	67.87

On motion of Mr. Randall duly seconded, the report was accepted and ordered placed on record.

After considerable discussion, the Executive Committee was appointed a committee to investigate ways and means of raising money for the use of Legislative Committee in furthering the interests of the Ceramic School.

President Stipes: This brings us to the election of officers. The first is President, and nominations are now in order.

Mr. Hammerschmidt: Mr. Secretary, and gentlemen, I rise to put in nomination for next year a man whom we all know, one who handles this convention well, and who always does his work well. I move that the rules be suspended and that the Secretary of this Association cast the ballet of this entire convention for John Stipes, of Champaign, for President. (Applause.)

Seconded by several.

The motion was put to the convention by Mr. Hammerschmidt and carried unanimously.

Mr. Randall: I presume the next is Vice-President. I think it is well when you get a good man among you for the first time and you see that he is an earnest and able worker, it is well to pull him up to the front, because later on you may need him to fill the chair. I nominate Mr. A. W. Gates, of Monmouth, for Vice-President, and move the rules be suspended, and the Secretary instructed to cast the ballot for Mr. Gates for Vice-President.

Seconded by Mr. Hammerschmidt and carried.

President Stipes. The Secretary has cast the ballot for Mr. Gates and he is elected your Vice-President.

Mr. Mamer: I believe the next thing in order is the election of Secretary, and I nominate our present Secretary for re-election, and move the suspension of the rules and that the President cast the unanimous vote of this convention for Mr. Hartwell.

Duly seconded and carried.

Mr. Lauer: Is Treasurer next? It gives me great pleasure to put in nomination one who is amply able by reason of his proportions to fill the responsible position of Treasurer. I take pleasure in nominating my friend Hammerschmidt for Treasurer, and I move the rules be suspended and the Secretary cast the ballot.

Seconded by several and carried.

President Stipes: The ballot has been cast, and Mr. Hammerschmidt is re-elected Treasurer. This winds up our business, and a motion to adjourn is in order.

On motion of Mr. Mamer duly seconded, the convention adjourned to meet at the call of the Executive Committee.

LIST OF MEMBERS OF THE ILLINOIS CLAYWORKERS' ASSOCIATION.

W. R. Guyer	Abington,	Ill.
Albion Vitrified Brick Co	Albion,	Ill.
J. J. Carpenter	Altamont,	Ill.
T. J. Carpenter	Altamont,	Ill.
Alton Paving, Building & Fire Brick Co.	Alton,	Ill.
J. F. Martin	Arthur,	Ill.
Joseph Riehle	Auburn,	Ill.
L. H. Lambert	Beaverville,	Ill.
S. H. Alsip	Belleville,	Ill.
Warren W. Ittner	Belleville,	Ill.
H. E. Shaw	Bement,	Ill.
H. E. Search	Bloomington,	Ill.
C. D. Cowgill	Brockton,	Ill.
L. J. Hull	Cambridge,	Ill.
N. L. Mamer	Campus,	Ill.
J. M. Mamer	Campus,	Ill.
John M. Heckard	Canton,	Ill.
J. W. Heckard	Canton,	Ill.
George B. Roller	Canton,	Ill.
John W. Stipes	Champaign,	Ill.
George F. Beardsley	Champaign,	Ill.
J. W. Stipes, Jr	Champaign	Ill.
Ross C. Purdy	Champaign,	Ill.
R. O. Lovett	Champaign,	Ill.
R. A. Stipes	Champaign,	Ill.
E. F. Anderson	Champaign,	Ill.
J. M. Gearhart	Champaign,	Ill.
Foster Bain	Champaign,	Ill.
C. W. Rolfe	Champaign,	Ill.
Louis B. King	Champaign,	Ill.
J. S. Hutson	Champaign,	Ill.
W. J. Lee	Champaign,	Ill.
Edward Lee	Champaign,	Ill.
H. H. Keller	Champaign,	Ill.
George J. Walters	Chatsworth,	Ill.
D. V. Purington	Chicago,	Ill.
W. D. Gates	Chicago,	Ill.
M. W. Blair	Chicago,	Ill.
E. R. Frazier	Chicago	Ill.
George H. Hartwell	Chicago,	Ill.
H. de Joannes	Chicago,	Ill.
George I. Dieterich	Chicago,	Ill.
H. S. Simpson	Chicago,	Ill.
J. R. Swan	Chicago,	Ill.
L. E. Rodgers	Chicago,	Ill.
H. C. Jerge	Chicago,	Ill.
Martin W. Lauer	Chicago,	Ill.
Arthur N. Allen	Chicago,	Ill.
H. C. Walker	Chicago,	Ill.
Main Belting Co	Chicago,	Ill.
Chicago Brick Machinery Co	Chicago,	Ill.
Thomas Moulding Co	Chicago,	Ill.
Henry M. Nichols	Chicago,	Ill.
R. B. Holmes	Danville,	Ill.
John E. Shea	Danville,	Ill.
Frank W. Butterworth	Danville,	Ill.
F. L. Selley	Danville,	Ill.
H. C. Adams	Danville,	Ill.
S. S. Curry	Danville,	Ill.
D. C. Haeger	Dundee,	Ill.
L. H. Martin	Dwight,	Ill.
C. L. Martin	Dwight,	Ill.
Percy Brubaker	Dwight,	Ill.
Walter M. Pratt	Earlville,	Ill.
Mrs. Walter M. Pratt	Earlville,	Ill.
F. R. Carter	East Peoria,	Ill.
Ben H. Richards	Edwardsville,	Ill.
Banner Clay Works	Edwardsville,	Ill.
D. H. Arbogast	Farmer City,	Ill.
W. S. Purington	Galesburg,	Ill.
F. C. Matteson	Galesburg,	Ill.
Frost Manufacturing Co	Galesburg,	Ill.
J. W. Wild	Gilman,	Ill.
A. W. Thatcher	Ivesdale,	Ill.
LaSalle Pressed Brick Co	LaSalle,	Ill.
Wm. Hammerschmidt	Lombard,	Ill.
P. H. Tiernan	Macomb,	Ill.
Dr. S. Russell	Macomb,	Ill.
C. A. Pech	Macomb,	Ill.
J. H. Millsom	Macomb,	Ill.
J. L. Scott	Macomb,	Ill.
F. M. Judy	Mackinaw,	Ill.
Marissa Brick Yard	Marissa,	Ill.
George W. Seward	Mason City,	Ill.
H. H. Seward	Mason City,	Ill.
F. A. Martin	Mazon,	Ill.
C. A. Harbaugh	Mendota,	Ill.
J. L. Turnbo	Metropolis,	Ill.
Tiffany Enameled Brick Co	Momence,	Ill.
Albert Velock	Monmouth,	Ill.
E. D. Porter	Monmouth,	Ill.
A. W. Gates	Monmouth,	Ill.
W. F. Lodge	Monticello,	Ill.
Oscar Frazee	Moweaqua,	Ill.
Joe Watts	Newton,	Ill.
H. H. Thomas	Oblong,	Ill.
Peter Munson	Ohio Station,	Ill.
A. F McAfee	Ohlman,	Ill.
W. S. Barnes	Onarga,	Ill.
J. W. Furby	Onarga,	Ill.
F. E. Swift	Ottawa,	Ill.
W. T. Blackburn	Paris,	Ill.
J. D. Jensen	Pekin,	Ill.
Charles Zoeller	Pekin,	Ill.
E. F. Lampitt	"	
A. J. Weidroth	Peoria,	Ill.
A. E. Giles	Peoria,	Ill.
A. Towle	Peoria,	Ill.
Frank J. Kanne	Peoria,	Ill.
Robert Unzicker	Peru,	Ill.
B. Youngman	Pesotum,	Ill.
T. T. Johnson	Pinkstaff,	Ill.
Plainfield Tile Co	Plainfield,	Ill.
Gem City Paving Brick Co	Quincy,	Ill.
A. S. Currie	Reddick,	Ill.
Frank Fellers	Ridge Farm,	Ill.
George H. Willems	Roanoke,	Ill.
F. Titterington	Rock Island,	Ill.
P. M. Johnson	St. Elmo,	Ill.
H. J Mies	Saunemin,	Ill.
Dr. A. L. Converse	Springfield,	Ill.
D. M. Duddleston	Stewardson,	Ill.
C. C. Barr	Streator,	Ill.
James L. Daugherty	Streator,	Ill.
Samuel Anderson	Taylorville,	Ill.
Oliver Tilbury	Towanda,	Ill.
S. W. Rawson	Troy,	Ill.
George W. Smith	Urbana,	Ill.
John Smith	Urbana,	Ill.
A. Barr	Urbana,	Ill.
H. B. Fox	Urbana,	Ill.
John B. Bennett	Urbana,	Ill.
H. J. White	Vandalia,	Ill.
S. J. Shaw	Vandalia,	Ill.
D. O. Loy	Wataga,	Ill.
Gillett Brick & Tile Co	Woodhull,	Ill.
G. C. Stoll	Wheaton,	Ill.
J. M. Powell	Brooklyn,	Ind.
W. T. Boyd	Cayuga,	Ind.
J. W. Robb	Clinton,	Ind.
H. H. Prather	Covington,	Ind.
Wallace Manufacturing Co	Frankfort,	Ind.
Southern Fire Brick & Clay Co	Hillsdale,	Ind.
T. A. Randall	Indianapolis,	Ind.
C. and A. Potts & Co	Indianapolis,	Ind.
J. W. Hensley	Indianapolis,	Ind.
Fred May	Lafayette,	Ind.
Star City Brick Co	Lafayette,	Ind.
A. Conner	Montezuma,	Ind.
S. C. Cowgill	Montezuma,	Ind.
John Gretencort	Montezuma,	Ind.
J. W. Arbuckle	Rushville,	Ind.
Kern Shrum	Salem,	Ind.
Mrs. Kern Shrum	Salem,	Ind.
Will P. Blair	Terre Haute,	Ind.
James Luther	Terre Haute,	Ind.
F. D. Oakley	Terre Haute,	Ind.
S. M. Cowgill	Terre Haute,	Ind.
Terre Haute Pressed Brick Co	Terre Haute,	Ind.
Pettyjohn Bros. Co	Terre Haute,	Ind.
L. R. Whitney	Terre Haute,	Ind.
Eagle Iron Works	Des Moines,	Ia.
A. J. Wheat	Emmetsburg,	Ia.
E. D. Parsons	Emmetsburg,	Ia.
G. G. Wheat	Emmetsburg,	Ia.
D. E. Morey	Ottumwa,	Ia.
Charles Burridge	Tecumseh,	Mich.
A. R. Ponder	Cape Girardeau,	Mo.
J. J. Gledhill	St. Louis,	Mo.
E. L. Hess	St Louis,	Mo.
Laclede Fire Brick Co	St. Louis,	Mo.
Evens & Howard Fire Brick Co	St. Louis,	Mo.
Christy Fire Clay Co	St. Louis,	Mo.
Scott Manufacturing Co	St. Louis,	Mo.
W. B. Chapman	New York City,	N. Y.
Arthur Koppel Co	New York City,	N. Y.
Ohio Ceramic Engineering Co	Cleveland,	O.
S. M. Coe	Columbus,	O.
C. W. Raymond Co	Dayton,	O.
C. W. Raymond, Jr	Dayton,	O.
F. F. Bentley	Niles,	O.
J. D. Fate Co	Plymouth,	O.
P. L. Youngren	Milwaukee,	Wis.

THE ANNUAL BANQUET.

As IN FORMER years, the banquet was the chief social event of the week at Champaign. It was given in the main dining hall of the Beardsley Hotel, the doors swung open at 8 o'clock, Wednesday evening, and the guests marched in to the inspiring strains of a string orchestra furnished by the genial manager, Mr. C. B. Hatch. At each plate lay a souvenir menu, on the front cover of which appeared the excellent half tone of President Stipes which graces the first page of this report, labeled, "Our President, To Know Him is to Love Him." The sentiment was heartily applauded by all present save President Stipes himself, to whom it was a surprise, as was plainly seen by the expression of his face when he observed it at his plate. The following bill of fare was served most excellently:

MENU.
Oyster Cocktail
Celery
Consomme Aux Trois
Bread Sticks
Stuffed Olives — Sweet Gherkins
Baked White Fish, A La Persillade
Potatoes Julienne
Fillet of Beef, Champignons
Potato Croquettes
Claret Punch — Lady Fingers
Fried Young Chicken, A La Maryland
Asparagus Points
Combination Salad
Brick Ice Creame, Kremete
Angel Food Cake — Chocolate Cake
Edam Cheese — Toasted Crackers
Coffee.

After cigars had been passed, Toastmaster Converse started the flow of oratory in a characteristic manner. Each speaker was introduced in an inimitable way with humorous anecdote or reference fitting the speaker or his subject. The responses were both instructive and amusing to such an extent that when the Editor of THE CLAY-WORKER was called on to close the program with an impromptu toast, the hands of the clock had passed the figure twelve on the dial. The following were down for formal speeches:

TOASTS.

Toastmaster, Dr. A. L. Converse, Springfield, Illinois.

1. Illinois........ Toastmaster Converse
2. Welcome..Manford Savage, Champaign
3. Men.........................Miss Addie M. Wallace, Indianapolis
4. Banks, Clay and Otherwise.......................H. E. Shaw, Bement, Ill
5. Into the Future.......................George F. Beardsley, Champaign
6. Man and Mud.............................Martin W. Lauer, Chicago
7. Brickyard Evolution...................Will P. Blair. Terre Haute, Ind
8. Our Prospects for 2000, A. D.............Prof. Ira O. Baker, Champaign
9. An Ode to the Clay Journals.......................D. O. Loy, Wataga, Ill
10. Machine Men's Trouble...............Charles Burridge, Tecumseh, Mich
11. The School of Experience...........Prof. L. P. Breckenridge, Champaign
12. Influence of Music on Machinery.............Harry de Joannis, Chicago

The event was made memorable by the presence of the ladies, who though a little seclusive, being grouped near the head table, seemed to enjoy the flow of wit immensely.

EXHIBITION OF MACHINERY, ETC.

There was less machinery on exhibition than at any convention for a number of years. The Ohio Galvanizing & Mfg. Co., Niles, Ohio, exhibited a fine line of steel brick pallets, which attracted much attention. While most of the machinery firms were represented no displays were attempted other than printed matter and trade literature. Several showed some excellent specimens of brick and tile, and there were a few samples of cement block shown, among them those made by Treasurer Wm. Hammerschmidt, Lombard, Ill., who explained to the convention that they were made in response to a local demand and not because he regarded them as good as brick for structural purposes. It may be well for brick and tile manufacturers generally to consider this matter in the same light and meet the competition of the hollow cement block by supplying them to the local builders who want them. In rural localities especially, this suggestion is worth more than a passing thought.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Convention Echoes.

Very Grateful to Philadelphians.

My Dear Secretary:

We have just returned home and found the very interesting souvenirs of our trip to the sea, for which I thank you. We have been knocking around Washington, Philadelphia and New York since you left us at Atlantic City and my sporting blood has just about turned to water. We, Mrs. Fish and myself, enjoyed the convention very much and feel very grateful to the Philadelphia Brethren and their wives, who made everything so pleasant for us. How does Atlantic City strike you as a good Convention City some time? Personally, I think it an ideal spot.

Rochester, N. H. E. B. Fish.

As Others See Us.

Dear Mr. Secretary:

Permit me to congratulate you on the convention number. Publication of so much matter so promptly is certainly an undertaking that speaks well for your force. The page of Atlantic City "beauties" is much enjoyed by some people. I saw Mr. Maltby, of the Continental, yesterday and in response to my question as to whether he was busy, he replied, "Yes, but not too busy to have the brickmakers again if they can be brought to Philadelphia," and added that he "never had a cleaner, more satisfactory body of men to entertain in his hotel." Yours very truly,

Philadelphia, Pa., March 2, 1906. J. H. Chambers.

His First National Convention, But Not the Last.

Dear Mr. Secretary:

Yours of the 16th received and was glad to know you arrived home safe, the sound part I will think about. We arrived home O. K., after a pleasant trip from Philadelphia to New York and Washington. I certainly enjoyed my first N. B. M. A. convention immensely, and think I have profited by my attending same, and if nothing prevents, will be at the one in 1907.

Everything looks like a good business for the coming year, and from my attending the convention, I think I will be able to take care of same to a better advantage than in the year past. With best regards to yourself and staff, I am, Yours Truly,

Ft. Wayne, Ind., Feb. 19th, 1906. E. C. MILLER.

Praise for the Philadelphians.

Friend Randall:

The February number of the Clay-Worker is a dandy. Our Quaker City friends know how to take care of the brickmakers and in the language of Mayor Weaver, (God bless the good women of Philadelphia) who did so much towards adding to the pleasure of our wives and daughters. It goes, without saying that the Philadelphians are royal entertainers, and when the word was passed that the 1906 convention would meet in the City of Brotherly Love, that in itself was a guarantee that we would have a royal good time. All agree that nothing was left undone to add to our pleasure, and the Continental did all that could be done to make us comfortable and our friend Maltby clearly demonstrated that he knows how to run an up-to-date hotel. As for myself I had a royal good time, but the absence of my dear old friends, Purington, Eudaly, Eggers, Dunn, and a number of others detracted from my pleasure, and kind Providence willing, I hope to meet all in 1907 at St. Louis. Yours truly,

Horseheads,, N. Y. R. G. Eisenhart.

"Dixie" Scott's Opinion.

Friend Randall:

I have gotten back from the convention safely and have been wanting to write you for several days and congratulate you on the splendid success of the convention at Philadelphia. The worst objection I could have to it was that it did not last long enough, as I did not have time to see one-half of the people there. I missed getting to more than speak to a number of my old friends, and I would have enjoyed very much having had time to "button-hole" them. Taken all together this was undoubtedly the best convention I have ever attended and I see that St. Louis has to follow the present precedent established in our World's Fair by having the biggest and best convention ever. "Meet me in St. Louis in 1907." Yours very truly,

St. Louis, Feb. 21. **Wm. F. Scott.**

The Philadelphia Meeting the Best of All.

Friend Randall:

I am in receipt of the February number of THE CLAY-WORKER. It is a daisy. I want to say to you that you have excelled all former efforts in the line of a full verbatim report of the convention, besides, the beautiful work you have artistically executed stamps THE CLAY-WORKER as the best industrial periodical extant. You should justly feel proud of the success you have made of the Twentieth Annual Convention of the N. B. M. A. I want to take this occasion to say that our pleasant relations during the past year have been a refreshing experience in this discouraging battle of life. Mrs. Blair joins me in wishing you and yours everything that is conducive to happiness, and that you "may live long and prosper." We have nothing but the most enjoyable recollections of our trip to Philadelphia.

Yours sincerely,

Cincinnati, March 1, 1906. J. M. Blair.

The Birmingham Delegation Had a Fine Time.

Friend Randall:

I have just received last month's CLAY-WORKER and congratulate you on its excellence. I have heard nothing but words of praise from our local boys for the convention and the full report. Of course everyone enjoyed the convention, and we are now looking forward with pleasure to the next. While you are always modest, considering the many nice things said of you by your admiring friends, I always like to include along with my approval of you and your work, a good word for Miss Wallace. The writer is more fully impressed at each convention of her ability, so please remember me kindly to her and tell her Copeland thinks a lot of your success is due to her. All the new beginners admit that Randall is the right man in the right place, and of course we older ones have known this all along. I regret more than ever not being able to participate in the pleasures you must have had at Atlantic City, but just here I want to say, while we had no pictures in THE CLAY-WORKER, our side trip to New York was very pleasant, and after you listen to some tales I will tell you when you come to Birmingham next, you won't have to draw on your imagination much to know that we, too, had a good time. Do not forget that promise to drop by and see us in the spring.

Yours sincerely,

Birmingham, March 6. J. R. Copeland.

ITTNER (Y) OF THE N. B. M. A. IN PHILADELPHIA.

Vagaries of an Atlantic City Visitor after a Sea Food Dinner.

Editor The Clay-Worker:

Along about the first of January the boys began to HUNT in their clothes for enough of the ROOT of all evil to take them to Philadelphia; that is, those who were in-KLEIN-ed to want to PIERCE the quietness of the Quaker City and run the risk of meeting a CROOK waiting for them at our GATES. Like all large cities, we have plenty of the BREED here who hang to you like a LEECH to a REED; you can always find them lounging around the hotels, MARSHALL-ing their forces, ready to STEELE and ROB, following the example of the GRAFF-ters and causing strangers a (De) LONG-ing for home, where they can listen to the CARROLL of the SPARROW down by the WELLS amidst the BURR, if from the South; or if a Northerner, driving the old SQUI(E)RS' mare to the four WHEELER, speaking to her in gentle TONE as she flounders through the SNOW, when a wheel breaking through and hitting a STONE at the top of the RIDGE-way, out bounds a FOX, which slipping under the BARR is off across the (BLOOM)-FIELD with my KERR in hot CHASE. Harke! I hear a HORN, and forgetting all sense of DUTY, I STOWE away my PORTER and start to grab a SPIERS when a PAINE catches me in the back, and falling, I tear my clothes so that I will have to see a TAYLOR. I discover I had fallen over an old POTT(S), but by KETCHAM hold of a POHL, I regained my feet and started off to see MILLER CONWAY who, in spite of his BLACK HALL CHAMBER(S), was a very ANGELL to a person in my plight. When I reached there the CARPENTER said he had gone WEST with a YOUNG widow, whose name was not BROWN. He BEGG(S) me not to mention it, or he would PLACE me in a TRENCH with the SWAN, STURGEON, and some other FISH. Discovering he was FULLER than a COOK and cursing my FATE, I turned my HORSEHEAD toward TOWNE in spite of the slight FREESE that was setting in. With my dis-GUISE I hoped to reach RANDALL, CONN(E) EARLY next day.

One of the Varieties, Strictly Pure

His Lucky Thirteenth Convention.

Editor The Clay-Worker:

The last convention was the thirteenth one I have attended, and it was certainly the largest and most harmonious and one of the best I ever attended so far, even if it was what some call the unlucky one, I enjoyed it more than any other one it has been my privilege to go to. Your report in the February Clay-Worker is certainly interesting and full, as you claimed in a previous issue it would be; in fact one paper was sufficient to pay the expenses of any one to go and hear it. Not just what was read from the paper and the discussion that followed in the Convention Hall, which you have published, but the discussion that it is impossible for you to publish, or any one else, and that is the remarks and discussions that are held in twos, threes, and larger numbers in the halls, etc., of the hotel after the sessions are over. The half-day meetings giving much more time to do this than when two sessions were held in one day, makes the meetings of the N. B. M. A more profitable than ever on this line.

The speeches at the Banquet were the best I have ever heard and go to prove that we have manly men, men that will stand for what they claim to represent, men of character and ability, even if the insurance investigation has found a few that to some may seem questionable. I am sure that no one could have listened to Mayor Weaver, and others, without having a feeling of confidence and renewed courage. It was a pleasure I can assure you for me to attend this the 20th convention, and am sure by the time to meet at the coming of age of the Association next year, no matter where it is held, those that attend will find a young and as fully developed Brick Manufacturers Association as could be asked for, with every prospect for a brilliant and successful future, especially if the last 13 meetings that I have attended can be relied upon to furnish information on this score, which I believe every one who has watched them will agree to, for every year they get better and better.

Wishing you success, I remain, Going on 14? Rip Van.

Enjoyed the Convention Report.

Dear Mr. Secretary:

The Clay-Worker containing your report of the Philadelphia meeting was duly received and I can not refrain from saying in a word, that it is in my judgment, very fine. Perhaps I appreciate it the more from the fact that ever since the 23rd of February I have been confined to my room from an injury to my back, while in the discharge of my duties at the brick yard. I am, however, convalescent and hope to be out soon. I will say further that while The Clay-Worker is not the convention, it is a great substitute for those of us who could not have the pleasure of enjoying the real thing. I certainly think the papers read at the Philadelphia convention were possessed of an unusually high degree of merit and the thoughts expressed therein brought out at a very opportune time.

Mr. Randall, as I was unable to go to Philadelphia, to receive one of those beautiful and suggestive N. B. M. A. badges, I should like very much to get one of them and one of the buttons of the former convention. With kindest regards for you and yours, I am,

Very truly yours,

Carthage, Mo., March 8, 1906. I. C. Wheeler.

Visiting His Old Home in England.

Editor The Clay-Worker:

I landed back here in England on December 21st and "Have you any brick,when will you have some," and not 500 to the States before the middle of March, so I shall have to miss the Convention this year. I hope that you will all have a good time, as usual. The brick trade is very slack just now over here, but believe the business will pick up again in the spring. I hope this will find you well and hearty. Wishing you and The Clay-Worker and all the members of the N. B. M. A. a happy New Year. Fred W. Dennis.

Marden Kent, Old England, Jan. 5, 1906.

Too Busy Getting Ready for the Coming Season.

Editor The Clay-Worker:

Enclosed find order for $5.00—$3.00 for N. B. M. A. yearly fee and $2.00 for Clay-Worker. I expected to be at the Philadelphia meeting but about that time all I could hear was, have you any brick, when will you have some, and not 500 builders on the yard and dry pan torn down and engine in machine shop. So I concluded to stay at home and get ready for the coming season. The prospects this spring are very good; the architects are two or three weeks behind with their work. We received our bronze medal from the St. Louis Fair about two weeks ago, awarded to our black brick; it is a very neat design. If there are any of the souvenir badges left from the Philadelphia Convention I would like very much to have one.

Respectfully,

F. L. Selley.

An Agreeable Surprise.

Editor The Clay-Worker:

We herewith hand you check for subscription to The Clay-Worker for 1906. Make this subscription in the name of the company. You will see by the new name that the company has changed hands, the new one is an incorporated one. We are enlarging and building up so that we may be able to meet the demands for our brick. We have never written you anything about the business, but will say to you now, we met with an agreeable surprise at the St. Louis Exposition. The State of Kentucky made the request that we furnish them some brick and shale, as they wished to boom Kentucky at St. Louis. We sent them brick and shale and never paid any more attention to it. After the Exposition was over we were notified that we had received an award. Later, we received a diploma, last month we received a medal, "Bronze" as it was, we were very much pleased with it. When you are in this neck of the woods come over and see us. Trade is good and the only trouble we have is to supply it. We could have easily sold 500,000 more last season if we could have made them.

The Newport (Ky.) Pressed Brick and Stone Co.

A Large Brick Plant in Mexico.

Editor The Clay-Worker:

I take pleasure in writing you that Mr. Hallwell has erected at Mexcoac, Mexico City, one of the largest brick plants in the Republic of Mexico on the soft mud and pallet system.

The machinery is from the American Clay Machinery Co., Bucyrus, Ohio. Mr. Hallwell has completed the Haigh kiln and now burning brick in it. It is the most complete kiln on the market. The brick can be burned 25 per cent. cheaper than in any other. The bricks are burned even from bottom to top. The kiln is very easy to handle and does not require as much help as the old style kiln. He has a Bucyrus dryer, and when completed the waste heat from this kiln will be drawn to the dryer to dry the brick. The brick when molded are dumped on pallets and placed on the cars and run in the tunnels to dry. When dry they are transferred to the kiln. This is a continuous kiln and Mr. Haigh deserves great credit. It is a model, up-to-date plant.

Mexico City is coming to the front; a great many Americans are building homes here in the American Colony. Fine streets are being laid out and sewered. The old buildings are being torn down and new ones taking their place. The brick business is prospering—there is much demand for the Spanish size brick; they are selling for $22.00 or pesos per thousand.

G. O. Right.

The Trip to the Plant of the Eastern Hydraulic Press Brick Company.

Editor The Clay-Worker:

I am back home again and putting on harness for the regular routine of business, but before becoming too absorbed therein, I feel constrained to drop you a few lines in regard to the convention at Philadelphia. It was par excellence—"the best ever," both in point of attendance, general interest and entertainment. The local committee certainly did themselves "proud," and if there was a kick on any score, by any one, I failed to hear it, but there was a universal expression of satisfaction and appreciation of the magnificent efforts put forth for the delegates' pleasure and comfort, and I know that each and every one of us hope that it will not be sixteen years before we get back to the "City of Brotherly Love" again.

Having special interest in the manufacture of face brick, I was only too glad to accept the most cordial invitation of the Eastern Hydraulic Press Brick Co. to visit their plant at Winslow Junction and together with some fifty other brethren went out to the plant Saturday morning, the 10th instant. Having visited a number of their other plants, all of which were, to my mind, as near the acme of perfection of the dry press method as I had ever seen, I was prepared to find the same high standard maintained at the Winslow plant but it was indeed a revelation to me to see the wonderful results obtained from the Jersey clays. The general arrangement of the plant impressed me as being the most economical and systematic that could be obtained, and the operation, as witnessed by us, was, in slang phraseology, "like clock work." I was fortunate to be under the special guidance of the general manager, Mr. Bass, who took great pleasure in showing me all the departments, and cheerfully gave such information as I felt warranted in asking for. He is a most modest and unassuming man but the force of his judgment and skillful management is impressed upon all the details of the operation of this great plant. It was the unanimous opinion of all the brickmakers who visited the plant that the uniformity of the burns in the six or eight kilns that we inspected was wonderful, and the fine system of handling orders and samples, in their shipping department, which I understand was originated by Mr. Bass, enables the company to keep an absolutely perfect record of the brick furnished to every building.

Mr. Ames and the other officers assisted Mr. Bass in showing the party through the plant and, finished off their excellent treatment of us by a sumptious luncheon in the "sample" room, where for a few moments we partook of the good cheer and exchanged humorous anecdotes and gave expression to our hearty appreciation of the hospitable treatment given us by the Eastern Hydraulic Press Brick Co., and this excellent day's outing was ended all too soon by the sound of the whistle of the approaching special for Atlantic City.

Again expressing my thanks and appreciation for the pleasure and profit derived from attending the Philadelphia Convention, I am, Yours sincerely,

Jno. W. Sibley, Treas.

Written for The Clay-Worker.

NORTHERN OHIO BRICK NOTES.

NONE OF the local brick concerns will be in a hurry to set their plants in operation this spring. Although the winter weather has been mild, thus permitting of building operations to go on unabated, there have not been as many bricks used as was anticipated by some earlier in the season. A stock of fully 11,000,000 bricks still remain on hand, and this is ample to meet all requirements until new brick is ready for market.

Brick business for this time of the year is some above normal. This is explained by the mild weather which this section has been having for the winter thus far. If the weather continues, building operations for the season will open far earlier than on former years. The present building activity may be termed a continuation of the activity of last season, and the only thing that may terminate the present operations is a cold spell or winter weather.

The records of the city building inspector show that 78 permits were issued during the month of February, the valuation of which totaled $201,010. This is far ahead of the same month a year ago. The permit involving the largest expending of money was for a three-story, 24-family flat building, value $30,000, brick construction, for Ella J. Reeves, on Monroe street. The Board of Education took out two permits for additions to be erected to the Raymer St. and Ontario St. school buildings, involving an expenditure of $16,000 for the former and $14,000 for the latter building. The additions will be constructed of brick.

The Toledo Tile Co, capital $10,000, was recently incorporated under the laws of the Buckeye State, the officers and directors being as follows: President, Frank Gorman; vice-president, H. W. Cummings; secretary and treasurer, Ralph S. Holbrook, A. J. Darton and William Gorman. The company has purchased five acres of ground on South street, near the Michigan Central railroad. A plant is being erected, and about May 1st will see the plant in operation. Tile and hollow brick will be manufactured.

The Consolidated Tile and Brick Co., of Rising Sun, O., has increased its capital stock from $10,000 to $21,000. A. R. Williams is president of the concern.

Little trouble is expected from the labor element. All, with but few exceptions, seem to be very well satisfied with the scale of wages of the past year. The brick layers have requested a little change—four hours to constitute a day on Saturday. They find no fault with the scale being paid, that of 55 cents per hour. It is estimated that there are about 125 bricklayers in the city. Last season there was a great scarcity of this class of labor, and thus building operations of the past year were held back to a certain degree. The mild weather, which has permitted of building all winter, with, however, excepting a few days, has thus far had the tendency to keep bricklayers in the city, and to also attract others here as well.

In making the rounds of the offices of the local architects, it was found that all are busy. A number of projects are sure of materializing, while, as is usually the case at this time of the year, there are a number that will not materialize.

All the brick plants in the city are closed down. The Ohio Brick Company and the Findlay Hydraulic Pressed Brick Company will set their plants in operation within the next couple weeks. These plants are equipped with artificial dryers, thus being enabled to operate at any time of the year.

Work on the new plant of the Collingwood Brick Co. is progressing rapidly, and the company expects to have the plant in operation by the first of April.

Richard W. Clarke, of Spear & Clarke, is expected home after a three months' stay at Tampa, Fla., about April 1st.

H. C. Ellis, who is spending the winter in Arizona, is expected to return to Toledo early in May.

The Columbus & Hocking Clay and Brick Company has issued a circular announcing the issuance of new capital, the intention of the concern to put out $500,000 of 6 per cent noncumulative preferred stock and $1,000,000 of bonds. For the present, it is understood, it is the intention to issue only $200,000 of the preferred stock and $400,000 of the bonds, which will be sold to the stockholders of the company at $400,000 for the combined issue, thus making the preferred stock a bonus on the bonds at par. It is said that the company is being backed by the Columbus & Hocking Coal and Iron Co., this company being one of the subsiduary companies of the Hocking Valley railroad. This action on the part of the railroad indicates the disposition of the transportation line to get into the brick business. The railroad owns 2,500 acres of land which has valuable clay deposits, and the proposition of developing the lands appears flattering. T. O. D.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

THE CALIFORNIA BRICK and Pottery Company has just completed some improvements in its works which has approximately doubled its capacity for manufacturing brick. An Automatic repress has been added, a hundred horsepower boiler and a two hundred horsepower engines have been set up and two more down-draft kilns, each holding 100,000 brick, have been erected. The new arrangements will greatly increase the capacity of the plant, and it will now be able to put out 25,000 repressed brick per day.

Meyer and O'Brien, architects, have just completed the plans for a seventeen story building which is to occupy a lot on Market street near Fifth street. The projectors of the new building will commence to break ground as soon as the rainy season is over. It is to be known as the Humboldt Savings Bank Building and will resemble the Call building somewhat in style, except that it will be much larger. A feature of the building will be a large amount of brick and tile work.

Gray Brothers, of this city, notwithstanding the season of the year, are operating their plants to their full capacity. They have over 1200 men working on contract and in their yard. They have a contract for supplying brick for the new custom house for Thomas Butler who has the building contract. The brick used will be of various kinds and will aggregate about 4,000,000. The excavation and foundation is also in charge of Gray Brothers.

The Southern Pacific cut-off which for a period of five years has been in contemplation has in the last few months resumed active operations. A series of fine tunnels are being put in the hills south of San Francisco. This will mean the use of about 60,000,000 brick. The San Francisco Brick Company is supplying 500,000 brick per day at the present time, and the San Jose Brick Company is furnishing brick at the other end having a contract for the bricks of the tunnel nearest San Jose.

A feature of the San Francisco trade at present is the cheapness of bricks. They stand at present at six dollars in the kiln. This is a much lower price than is said to prevail in the east, and the brick here is 2½ inches thick as compared with the 2⅛ brick of the East.

Mr. Rose, of the Rose Firebrick Company, is expected back to San Francisco in the near future. He has been conducting a series of interesting experiments with California materials for brickmaking and has been very successful. The nature of his experiment will be made public later.

The Alta Brick and Lime Co., of Reeding, Cal., begun active operations last week. The company will turn out about 30,000 brick per day and has already sold ahead about 1,000,000 brick. Shipping from the plant will begin early in April.

The Simons Brick Co., of Los Angeles, is to put in new machinery for a tile factory, to cost about $2,000.

Mining men of Bulfrog, Nevada, are prepared to open up and test a large deposit of kaolin which has been discovered three miles from Bulfrog.

The Santa Fe Brick Co., recently incorporated to engage in business at Whittier, Cal., has practically completed its plant and will begin work early in March.

C. A. Hooper is preparing to erect a brick yard and pottery plant at Black Diamond, Cal. Mr. Hooper has discovered an excellent deposit of clay in that vicinity which he will utalize for the manufacture of terra cotta pipe and paving brick.

PACIFIC NORTHWEST CLAY MEN ORGANIZE.

UNDER the name of Northwestern Clayworkers' Association, a majority of the brick and tile, sewer pipe, pottery and terra cotta manufacturers of the States of Oregon, Washington, Idaho, Utah and Montana completed organization for mutual benefit and protection at Portland, Oregon, on Feb. 26th. Fifty-four manufacturing plants were represented by delegates to the convention, which was held in the rooms of the Chamber of Commerce, and 62 others who were unable to secure personal representation at the organization meeting were admitted to membership on their written requests.

The organization of the association is the result of a campaign which has been carried on for the past six months by the leading manufacturers, who have long felt the need of a closer union of those engaged in the clayworking industries. Though no delegates from those states were present yesterday, it is the intention of the association ultimately to bring into the association manufacturers in California and Nevada and include as nearly as possible all plants west of a north-and-south line drawn through Salt Lake City.

Officers were elected for the first year as follows: President, A. M. Smith, of Portland; pice-presidents, R. P. Bradley, of Tacoma; L. L. Haynes, of Lewiston, Idaho; and L. P. Kern, of Portland; secretary, Frank A. Lathrop, of Portland; treasurer, G. W. Bates, of Portland. The following were named as members of the executive committee: J. H. Spear, of Spokane; R. M. Miller, of Seattle; W. F. Hidden, of Vancouver. Committees on railroad rates, drainage laws and uniformity of products were also appointed.

After meeting, the delegates were taken out to inspect the Randel & Kinsey clay plant at Sylvan, and later were given a banquet at the Commercial Club, of Oregon, at which Governor Chamberlain spoke, and brief addresses were made by H. M. Cake and other speakers. After the banquet, a meeting of the executive committee was held.

NEW SOUTH BRICK MACHINERY PLANT.

During the past year many brick plants, large and small, have been established in the South. While many brick-machine builders of the North and East have assisted in furnishing the equipments needed for those plants, yet Southern manufacturers have been well represented. The Southern manufacturers include Messrs. J. C. Steele & Sons, of Statesville, N. C., who manufacture the New South brick machinery. Their plant has been established 15 years, and they offer a full line of machines up to 100,000 daily capacity, including practically all of the auxiliary machinery used in any size plant. The facilities have recently been considerably increased, and orders for three large outfits, which will keep them busy for several months, have been received. Last year the firm employed about 60 men on full time, and will probably increase that number this year.

THE CLAY-WORKER

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TWENTY-THIRD YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to
227-233 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

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CURRENT COMMENT.

A song for Treasurer Sibley: "Be it ever so humble, there is nothing like a surplus."

* * *

The Rattler Test for Paving Brick makes noise enough to attract attention, and we are absorbing more information from it right along.

* * *

One of the signs of the times is, there are more opportunities now than ever before to push clay products into the building of homes.

* * *

Why should not John D. Rockefeller be a smooth article, doesn't oil lubricate? And hasn't he got more of it than any other individual on earth?

* * *

We are pleased to chronicle the establishment of a School for Bricklayers at Cleveland, Ohio. It is a matter of deep interest to every brick manufacturer.

* * *

The road building idea that will last the longest is the one that includes the use of paving brick, and the road paved with brick will last the longest, too.

* * *

Philadelphia may be slow, but let us hope she may be sure in the establishment of a trade school where her boys may learn brick laying and other allied trades, if they want to.

* * *

It is beginning to look as if labor organizations will have to open their doors more freely to apprentices, or some of the doors will be taken down. It is un-American to forbid any youth in the land to learn any trade he may desire.

The toughest place in the problem of economy in the brick business is when it comes to laying the brick in the wall. We are approaching that problem wisely when we advocate trade schools.

* * *

The clayworker who did not get some good out of the last National Convention is the man who staid at home and did not even read the report. There is a free sample copy of the February CLAY-WORKER awaiting that man if we can locate him.

* * *

As an industrial people with doors wide open, and the latch-string of the process of manufacture hanging out to all comers, the clayworkers take the lead. They find this wide open policy pays, too, but that is not the only reason for it; they are just simply built that way, big hearted and broad minded.

* * *

The demand for building brick has continued exceptionally active throughout the winter in all the great cities of the country, and particularly in New York where the demand has exceeded the supply and common builders have been selling at $10.00 per thousand and up. Fortunately, for the brick manufacturers along the Hudson, the river has been open to Haverstraw all winter. Barges and schooners of brick have been seen floating down to the metropolis almost daily—ordinarily a rare sight during midwinter, but then this is not an ordinary winter.

* * *

This is a good year for conventions. The meetings of clayworkers have all been more largely attended than ever before. Without a doubt the National Convention at Philadelphia set a mark which it will be difficult to reach, much less surpass, in the years to come. The last of the State Conventions, that held at Menomonie, Wis., the ninth and tenth inst., was a gratifying success. A full report of the proceedings will be given in the April CLAY-WORKER. The report of the Illinois Convention in this issue is complete and accurate, as the reader will see, and appreciate, too, if comparison is made with other alleged reports.

GET READY FOR SPRING.

Spring is almost here. The evidences of it abound. There is an increase in business activity which includes all departments of industry and there are ample indications of a more active demand for brick than has ever been known before at this season. It is now necessary for manufacturers and dealers to be ready, so far as possible for the better business that is certain to follow the present satisfactory conditions, one of which is a comparative shortage of brick in all yards. The season promises to be early, even in the Northern States, consequently it will be necessary to arrange plans and get started upon changes and improvements at as early a date as possible. The few brick left for delivery in the spring and the first burnings of the season will be uniformly high in price and the earlier the first burnings are ready for delivery the better.

THE CONCRETE BOGY.

After seeing the country flooded with ridiculous claims of what can be done with concrete as a substitute for brick in building operations, claims in which the item of smaller cost figures prominently, it is something in the way of relief to turn occasionally to a consultation of figures that are different. In a paper on masonry construction and the materials used, read at a recent meeting of the Southern California Chapter, American Institute of Architects, Mr. Jos. Simons, president of the Simons Brick Co., Los Angeles, Cal., said a number of good things from which we quote the following:

"As to the relative cost of brick, steel or concrete in structural work, where an equal safety factor is desired, it largely depends on the locality. In our community a good brick wall that will not crush under a load less than 2,500 pounds per square inch, can be constructed for 28 cents per cubic foot. A concrete wall without reinforcements, made from 1 to 6 mixture, using broken stone, the ultimate load of which will not be over 1,800 pounds per square inch, will cost you approximately 36 cents per cubic foot, and if same is used for small piers, girders or floors, where great care must be taken in preparing forms to receive it, another 8 to 10 cents a foot must be added, and when steel rods are used, this cost must also be computed, a careful estimate raising it to approximately 70 cents per cubic foot. The amount of steel that concrete will displace in girders is as yet an unknown quantity. The weight of the concrete floors and girders ranges from 142 to 151 pounds per cubic foot. Cinder concrete weighs 103 pounds plus per cubic foot; brick work ranges from 99.8 to 137.3 pounds per cubic foot; structural terra cotta when laid up, about 45 pounds per cubic foot; brick of the greatest density carrying the heaviest load; those of the least density carry the least load, showing that where it is necessary for brick to carry a very heavy load the most dense and compact material should be selected.

BOOST CLAY PRODUCTS.

Now that we are all home and settled back in harness again, after the greatest Association meeting ever held, and filled with renewed assurances that clay is the great universal building material, let us all turn too and every man resolve himself into a boosting committee to push clay products against all competitors. There never was a better time in the world. Last year it looked good for clay, because lumber was scarce and high, and this year it is better, because lumber is higher than ever and lumber dealers are contending that it will not go lower but will continue to climb. In other words, we are getting closer to the subject that has been up several times, and that is, the dawning of the day when wood as a structural material will be merely an incident, and the builders of homes will turn to hard building material almost exclusively. We have talked about this time and time again, looked it over through a telescope as it were, and we have all known that the time would come, and now what we need to do is to wake up and take home the realization that the time is here now and it is in order to be up and doing. The fire-proof house, of course, is the ideal to which we should all look, but where we can not inspire a man to build a fire-proof house, get him to build the next best thing to it, a brick house, with wood trimmings. Take the stock of material you have to offer in your community, figure on what can be done with it in the building world, and then make a noise, tell people about it, stir up interest in it, talk it over with architects, contractors and builders, with your local paper and with everybody that can be interested, and will wield an influence toward furthering clay products as a building material. Every man with a country brickyard can and should do a part in this good work, not all in the same way probably, but there is some way for every man to help the cause along and help himself at the same time. The main point the general public needs education on is the item of cost, and the next is the beauty of design, and this is something that nearly every brick man can give information on, if he will go to a little trouble in the matter. If you are in a community where building is not on a very pretentious order, do like the lumber yard people do. Sketch out some house plans, figure up what it will take in the way of brick and what it will cost for material, and the amount of labor it will probably take to erect it. Many a lumberman has made lots of his business by tactics of this kind, by figuring with and educating prospective builders in regard to the material they should use, and what it should cost, and there is no reason why a brick man should not be able to do the same thing. In some communities you will have to work direct on the builder, in others it will be with the local bricklaying fraternity, others with building contractors, or for the more pretentious undertakings, figure with architects. But the general idea is the same, and what we need is to get to figuring with them more so that they may be enlightened as to the superior quality of clay products as the building material, also in regard to cost and beauty of design that is possible. In country towns and in cities, too, for that matter, the local papers furnish an opportunity for spreading the gospel of clay products that is apparently being neglected. Printers' ink is a great thing, and there is nothing that helps form public opinion or create public interest more than the local paper, and as a rule these papers are always glad to get closer to their industrial people, and to exploit worthy ideas. There is hardly a brick man in the country but what could give material to their local papers for some excellent articles on the use of clay products if they would but make up their minds to do it, and if the brick man will show an interest in his local paper the local paper will very likely show quite an interest in him and his product, especially if he is, or becomes an advertiser in the paper. This is all right and fair, too, because you should not expect your local paper to do everything for you and the community, too, and get nothing in return, and besides, advertising helps generally and brings its returns if properly done. The point to it all is to shape the local newspaper man's interest in the matter so that it will take on the form, not of writing a lot of gush about yourself and your industry, but an intelligent display of the possibilities of erecting homes out of clay products. Make it a campaign of education with the prospective builder as the important factor, in that he is to be benefitted by seeing and making use of ideas on home building, ideas that he will appreciate and at the same time respond to by using clay products for building where otherwise he might have turned to inferior competitive material.

MANUAL TRAINING VS. TRADE SCHOOLS.

Skilled workers in all trades decrease with alarming rapidity. Where formerly apprentices were being taught in the shops or elsewhere in actual work at trades to fill the places of the older men, now there are no apprentices. Or, at least, they are so few that there are not nearly enough to fill the places of those who are dropping out of the ranks each year. Experienced observers declare that unless something is done to check this evil it will be impossible to maintain the trades of this country upon their present level of quality of product and quantity produced. Something must be done to change the present dangerous tendencies. Many suggestions have been made, but none is so practical and so American as the establishment of public trades schools where boys and girls can be instructed in the various trades just as they are now instructed in the purely literary departments of education. The experiment is not new. While comparatively few distinctive trade schools have been established upon public funds, the manual training deparments of the public school curriculums have demonstrated that public school methods of teaching can be successfully applied to this system of instruction. It is simply a question of expansion. The foundation has been laid for years. The superstructure can now be safely erected.

Reference has been made to the manual training school as a foundation for the trade school. Possibly there should be an explanation made which will serve to distinguish between the two. The manual training department trains and develops the executive and motor sides of a child's nature. In other words, it teaches him to do things. It also fits the child for higher technical training. The trade school does or should go beyond. It should teach actual wage earning trades. It should teach young men how to be brickmakers, bricklayers, plumbers, carpenters, or whatever else is selected after careful consideration of capabilities and natural bent. The aim must be entirely practical, not in a narrow sense, but in the broader sense that all work of that character is honorable and necessary. Students must be trained to perform specified kinds of skilled labor which have a commercial value. But the learning of a trade must include its scientific principles and not be confined merely to the training of the hand to do certain work. To be entirely successful in the case of mechanical trades, instruction in drawing, in physics and in mathematics applicable to the trade must be included. The reason for this training is found in the fact that trades frequently change and the instruction must be broad enough and be of such a character that the individual who finds his work in one trade gone, or greatly reduced by these changes, can easily shift to another. Such teaching can be carried out in the right way only under the general school system as it is administered in all cities. The time has come for the establishment of public trade schools and the sooner it is done the better it will be for the various trades represented in the average city. The Clay-Worker is gratified to chronicle the starting of a bricklaying school at Cleveland. It is a much needed and very worthy undertaking.

ODE TO THE CLAYWORKER.

By D. O. LOY.*

Born in my day, strong at your birth,
No better Journal now on earth,
In childhood, one great leap you took
Into an album, and, a book.
Since your clay banner was unfurled,
Your fame has traveled 'round the world,
Conceived and fashioned in a day,
In this bright world you've come to stay.

My own namesake, I love you well.
I never meant to say farewell,
Come back, come back, with all your charms,
And lay spread, open on my arms,
Then your bright pages I'll peruse,
From month, to month. I want your news;
I'll read, I'll think, I'll understand
Your tracings of the Human hand.

The more I read, the more I find,
Bright traces of the master mind.
Wisdom and truth, which you impart,
Portrays to me a Brain and Heart.
Oft, when you lay upon my knee;
In my own tongue you talk to me;
Human, deny it if you can,
You're made up of the best of man.

Your praises fall so fast and thick
On men who succeed, making brick.
Some poor, some rich, some earning fame,
Clayworkers, who, gave you your name,
With cameras, with ink and pen,
Pictures you draw of winning men.
Some bright, sweet day, not soon, I guess,
You'll tell the world of my success.

You're always springing a surprise,
Clays and clay men, you analyze.
To help the men you find in need,
You tell how other men succeed.
Write up such men with ease and grace,
Then kindly show your subject's face.
Treating all men like a Brother,
Making Clay men love each other.

No room to read between your lines,
As bright as day each subject shines,
Your correspondents, as a rule,
Some time, some place, have been to school;
Your editor, Ah, he's not dead;
No slow wheels turning in his head,
Before you're out, he proves each line,
You pay him though, to make you fine.

In panic times of ninety-three,
You was the friend who stuck to me.
Beneath dark clouds, as black as night,
You saw me sinking out of sight;
Yet laden with kind words of cheer,
You visited me twelve times each year.
If dying, I would take this vow,
To win, you tried to show me how.

All of man's failures you forgive,
Bright flowers give them while they live.
I want no diamonds on my breast,
When I am laid away to rest;
Two things, I hope you'll keep on file,
Loy made some good, hard Brick and Tile;
Played even long before he died,
Leaving a fortune for his bride.

Ah, Journal, if I know myself,
I'll keep you resting on my shelf,
Then when I'm blue and lonesome too,
I'll spend long, happy hours with you.
Scanning you with my time dimmed eye,
Till called into the bye and bye.
Till then, I cannot name the date,
I'll say CLAY-WORKER, Thou art great.

January 10, 1906. D. O. LOY.

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*Written for the CLAY-WORKER, and read at the banquet of the Illinois Clayworkers Association, January 23, 1906.

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WANTED, FOR SALE, ETC.

WANTED—A first-class burner of terra cotta ware; one thoroughly used to burning glazed and enamelled ware. Address T. C. Co.,
3 1 d care Clay-Worker, Indianapolis, Ind.

FOR SALE CHEAP—25,000 pine pallets, both kinds. Good as new. Also shed racks, carts, wheelbarrows and other equipment. Address BOLEN BRICK CO.,
2 1 c Marion, Ind.

FOR SALE.

Shale brick plant; capacity forty to sixty thousand per day; six kilns, two 80-horsepower boilers and 150-horsepower engine. 15 60-100 acres of land, with abundance of shale, makes good paving and building brick. On branch of B. & O. R. R. Ready sale for entire output. Appraised at $20,268.05. Address ROSS W. FUNCK, Trustee,
Wooster, Ohio.

For Sale, Wanted, Etc., Ads Continued on Pages 529, 531 and 532.

The Raymond Open-Air Drying System.

We beg to announce that we have added to our already large line of Clayworking Machinery and Supplies an Open-Air System of Drying Brick.

THE C.W. RAYMOND CO. WE COVER THE GLOBE WE WORK THE EARTH DAYTON, O. U.S.A.

This system contemplates the use of the McKenzie Patent Elevating Brick Car.

THE C.W. RAYMOND CO. WE COVER THE GLOBE WE WORK THE EARTH DAYTON, O. U.S.A.

Our printed matter is subject to your command, in the form of Exhibit Sixty-three, which enters into detail.

The C. W. RAYMOND COMPANY,

DAYTON, OHIO, U. S. A.

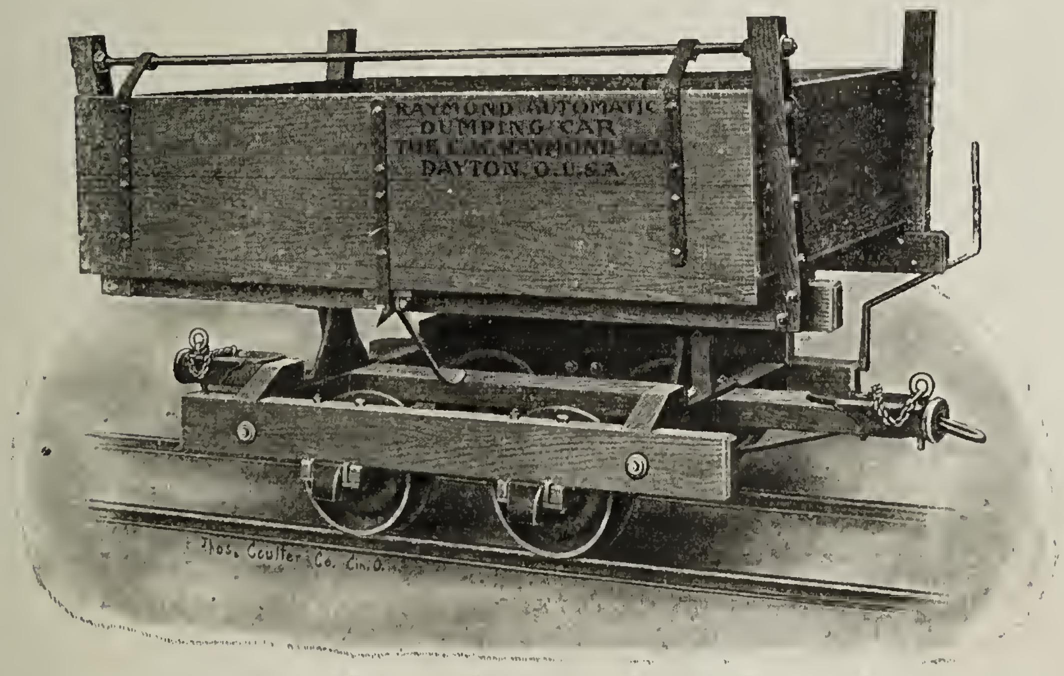
BRICKYARD SUPPLIES.

Our Brickyard Supplies are fully up to the "Raymond Quality," so favorably identified with Raymond machinery.

We manufacture a complete line of supplies, as well as equipment for hand and power yards, for use with soft and stiff mud systems.

Our Catalog is free for the asking.

THE C.W. RAYMOND CO. WE COVER THE GLOBE WE WORK THE EARTH DAYTON, O. U.S.A.


RAYMOND AUTOMATIC DUMPING CAR THE C.W. RAYMOND CO. DAYTON, O. U.S.A.
Thos. Coulter & Co. Cin. O.

RAYMOND AUTOMATIC SIDE DUMPING CAR.

Brick Machines
Dry Pans
Pug Mills
Cutting Tables
Represses
Conveyors
Elevators
Dumping Cars
Hoists
Trucks.

THE C. W. RAYMOND CO.

Dayton, Ohio, U. S. A.

Written for The Clay-Worker.

KANSAS CITY BRICK AND BUILDING NEWS.

THE exceptionally warm and pleasant weather of February had a very good effect upon building operations. Contractors had of course made every preparation to get along with as little work as possible in February, for it is always the worst month of the year for building operations, and for that reason building operations were not as extensive as they would have been, otherwise. It turned out that all builders might as well have continued their work right through the month.

The building material men are very much elated over the way their business has held up through the winter, stating that while it is not like the Spring and Summer business, still it is a great deal more like the regular business of that season than like the regular winter business. It now appears that with the start already made the past two months, the building operations in this city will be by far the greatest the city has ever known. You cannot find a single builder who will not say that this is the case, and all building supply dealers are reaching out after material in all directions, for they know their capacity is to be tested this year.

February is always a dull month in building operations and last month was no exception, although the building permits issued for the month showed a very good increase over the corresponding month of last year, and ninety per cent. of the permits issued were for dwellings. This shows that the building of homes continues to be popular as for the past several years. It would seem that each family living in the city will soon have a home of its own. The total of the building permits for the month was $464,255, as compared with $390,155 the same month of last year, an increase of $74,100. Owing to the fact that the permits were largely for homes, there was but 25 out of the total of 248 permits which called for brick, and their total value is $189,500.

The paving situation is still a mixture of asphalt, and the mixture does not seem to grow into a compact mass as readily as usual. The last bids for paving were held up on account of a protest from the Barber Asphalt Co. against the clause in specifications that a brand of asphalt must be used in paving which had been in use two years and proved satisfactory.

"The Barber Company has laid asphalt that has stood the test for a much longer period than two years, and why is it now objecting to this clause in the specifications?" inquired a man who is innocence personified.

"That's a funny question to ask," replied City Engineer Harper, "for it is all very plain to a man who is onto the ropes. The Barber Company wants to get into the competition which 'open specifications' assures, but it wants to get in on a basis of laying a new and untried brand of asphalt. If I remember correctly it is called Jericho, or something like that, and I understand the Barber people can get it a great deal cheaper than they can Lake Trinidad, which they have been laying in the past in Kansas City. City Engineer Rosewater, of Omaha, I am told, has refused to accept a street laid with Jericho and my information from Springfield, Ill., is that the Jericho brand has been tried there without satisfactory results. The import of 'open specifications' is not for the laying of cheap asphalt of unknown endurance, but the best asphalt at cheaper prices than taxpayers have been forced to pay in the past."

The Missouri and Kansas Brick and Material Co. has secured the contract for the new Masonic Temple, about to be erected in Independence, Mo.

It seems Brother Dickey is going to have some competition in the sewer pipe business in this section of the country, judging from the good reports coming from St. Joseph, Mo., where a thorough test has been made of concrete sewers. A meeting of civil engineers to inspect the work declared it would revolutionize sewer construction.

L. W. McCollum, secretary of the W. S. Dickey Clay Mfg. Co., has just returned from a three months' trip to Manila and other Asiatic points.

Robert Nesch, of the Pittsburg Brick Co., left the later part of February for a pleasure trip to Florida and Cuban Points, and will return by way of Hot Springs, Ark., and make a stay of some little time there. He is not expected back until tne end of March.

The Kansas City Hydraulic Pressed Brick Co. is only running one press at the present time, in its three plants in this city.

The Flanagan Bros. Mfg. Co. state that they are loaded down with orders this year, and are turning out a better quality of brick than they have ever made before.

The Stukenberg Pressed Brick Co. has been running steadily all winter, and has been unable to supply the demand made upon it.

The Dwyer Brick Co. is running full time, and cannot keep up with its orders. This company is using natural gas, and reports it a considerable saving on the cost of coal, besides it gives their product the standing of being Kansas gas-burned brick, which so many architects are now specifying here.

The Schrage Brick Co. has almost sold out its stock of brick on hands, and will soon start up for this year.

Among the building supply people, the Eadie Building Supply Co., the Roll Brick Co., the Bryant Supply Co., the Cohen Building Material Co., and L. W. LaDow are all reporting a big business, which has been almost continuous through the winter season.

The Lyle Brick Co., which manufactures a red pressed shale brick of quality, will start up again in a few days. The quality of their output is such that the sale is very large.

The Lawrence Vitrified Brick Co., of Lawrence, Kas., have been installing new machinery, and are now making a side cut repressed vitrified brick, which will give them one of the finest vitrified face bricks to be found in this market. The Eadie Builders Supply Co., which has the agency for this brick in Kansas City, is much pleased with the improved conditions, and expects to use a lage part of the output of the plant here. K. A. W.

TRADE LITERATURE.

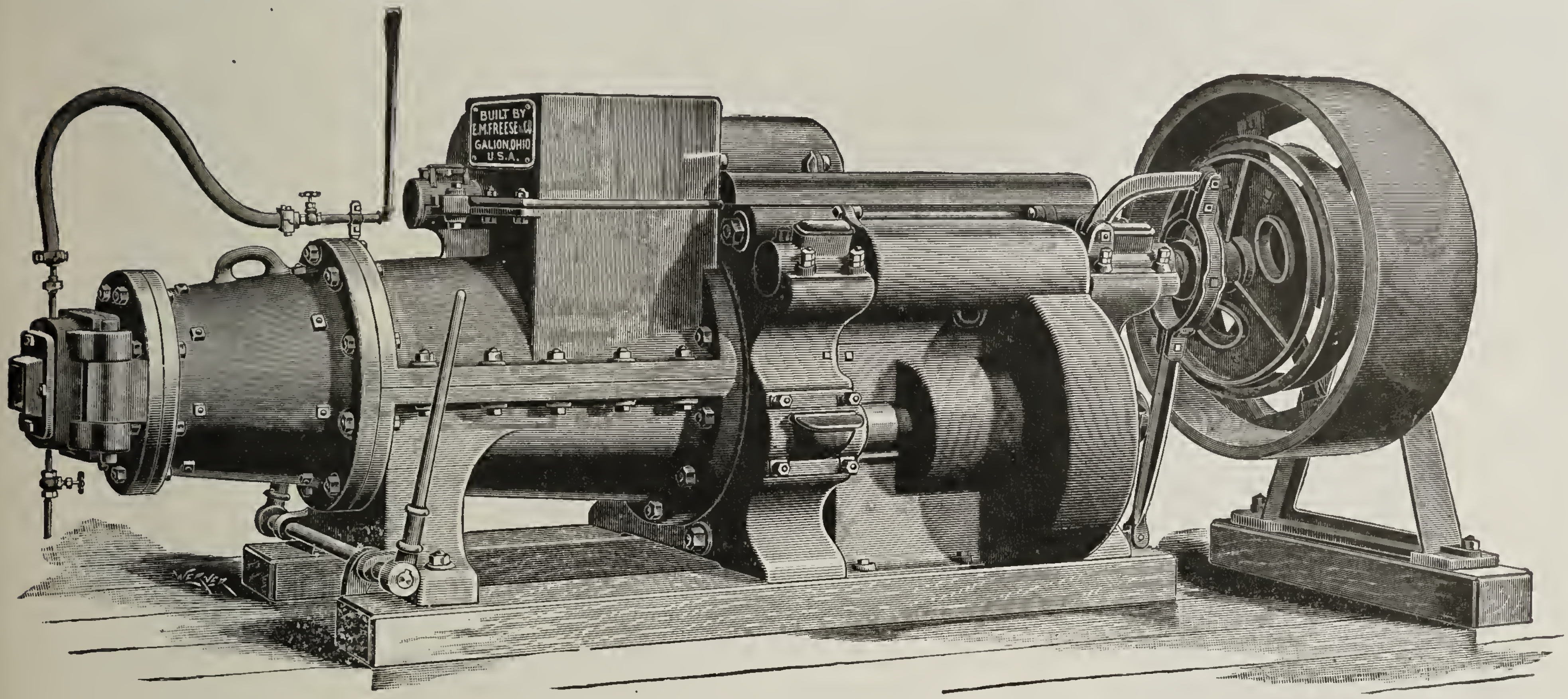
THE ILLINOIS SUPPLY AND CONSTRUCTION Company, St. Louis, Mo., has out a new catalogue of brick presses and other machines for the manufacture of roofing tile and other appliances for the production of structural materials of clay, and the improved Grath down draft kiln which is adapted to any kind of fuel, either wood, coal, crude or fuel oil, producer or natural gas. The book is an interesting addition to trade literature and a copy can be had for the asking.

THE FROST MFG. COMPANY, Galesburg, Ill., has out a handsome and interesting little book which in addition to a general view of their extensive manufactory at Galesburg and engravings of their products, engines, boilers, etc., gives a partial list of the users of same. From which it is very apparent that Frost engines and boilers are in general use throughout the United States. For a copy of this book and other information relating thereto, address The Frost Mfg. Co., 135 Adams St., Chicago, Ill.

CHISHOLM, BOYD AND WHITE COMPANY, Chicago, Ill., is sending out an advance section of its No. 15 Catalogue of Boyd brick presses. It is considerably larger than the ordinary catalogue and the illustrations are executed in a style that is seldom equalled in trade literature and may very properly be classed as works of art. All of the large family of Boyd presses are shown, also their all iron and steel frame self contained dry pan and the Acme clay mixer and feeder. Those interested in the manufacture of high grade press brick of any sort are requested to write for a copy of this book.

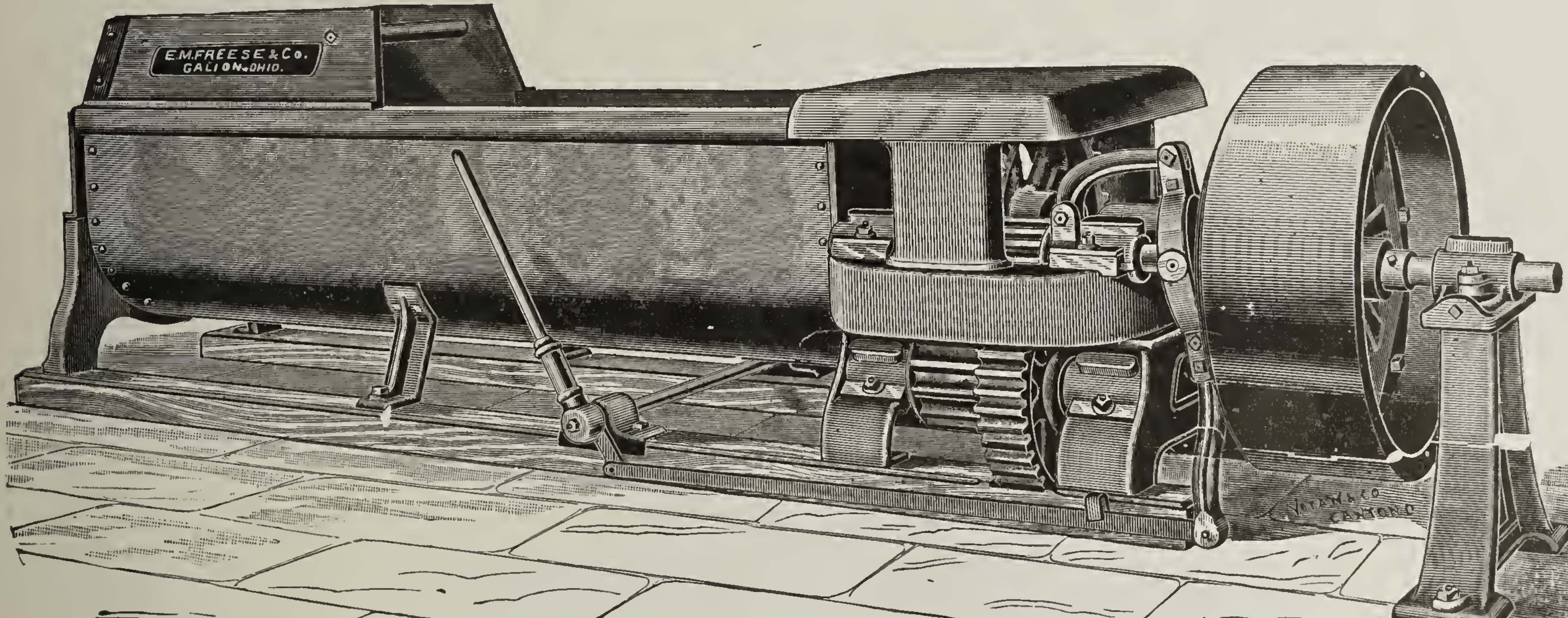
HERCULES CEMENT STONE MACHINE is illustrated and described in a handsome catalogue issued by the Century Cement Machine Company, Rochester, N. Y., whose ad appears on page 555 of this issue. Not only the machine but the products of same are fully illustrated, and those of our readers who are interested in cement stone products will do well to write for a copy of this book. One of a number of interesting illustrations is a view of a building in St. Petersburg, Russia, built with blocks made on a Hercules machine. The method of making cement curbs and gutters is also illustrated. Write for a copy of the book, mentioning The Clay-Worker.

Our Mammoth Brick Machine


BUILT BY
E.M.FREESE & CO.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug=Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitetd for making a fine quality of brick.

E. M. FREESE & CO., - - Galion, Ohio.

See Ads on Pages 576 and 577.

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF PITTSBURG AND VICINITY.

THE BRICK AND clayworking business, which has been practically at a standstill for the past two months or so, has opened up now to the condition that is to be looked for at this time of the year, and the indications are that there is an exceptionally good season ahead. The above assertion that the business has been at a standstill is not meant however to convey the idea that the various plants have not been working during this time, for they have and the majority of them have had about all that they could handle, and still keep their yard stocks up to the size that they carry at the beginning of the busy season.

The selling end of the business is the end that has experienced the falling off in the business, but the business conducted during the winter in coke oven and blast furnace brick has been, if anything, stronger than it was during the fall. Now, however, the building and the paving branches of the industry have commenced to pick up, and with the enormous amount of new work contemplated for the coming spring and summer, there is every reason to believe that a heavy business will result. Prices, too, bid fair to be unusually well maintained.

The National Fireproofing Company will hold a special meeting on April 5th to consider issuing bonds to the amount of $2,000,000, and thereby increase the indebtedness of the company from nothing to the above amount. The money raised will be used for improvements.

Palmers' Brick Works at Ferguson, Pa., were destroyed by fire the latter part of last month, and as a result, the coal mines owned by the same concern have been forced to close down temporarily. The plant will be rebuilt at once. It was known as the Dunbar Firebrick Company.

The Mack Manufacturing Company, of Allegheny, has been awarded the contract for furnishing the brick to be used by Allegheny City during the ensuing year. The requirements will be large.

Judge Buffington, of the United States District Court, has adjudged the West & McLean Brick Company, of Pittsburg, bankrupt. The firm was thrown into bankruptcy several months ago, but R. C. McLean filed a protest, claiming that the concern was perfectly solvent, and asked that the petition be set aside. The Court, as stated above, has ruled otherwise, however. Individual petitions have also been filed against the partners of the firm, viz., Joseph A. West, Luke F. Darrell and Robert C. McLean. A jury trial was at first asked, but it was finally decided that the Court might make the decision.

A receiver has been asked for the plant of the Callery Brick and Tile Company, of Callery Junction. The plant was closed down several months ago, having been operated at a loss for some time, but the stockholders believe that the proper person can run the plant so that it will pay. The plant will probably be started.

The addition to the Hays Station plant of the Harbison-Walker Refractories Company, is now about completed, and will materially increase the company's capacity there. The new plant is one of the most modern in the country, and the group at Hays Station makes one of the largest in the world. Silica brick and blast furnace shapes will be the principal products manufactured at the new plant.

The Reese-Hammond Fire Brick Company, which two years ago asked for the appointment of a receiver for the plant, has now filed an application in the Court, asking for the discharge of the Westmoreland Savings and Trust Company, which was appointed receiver at the time. The debts of the company have been paid, and the concern is in position to continue the business, it having been placed on a paying basis.

James K. and Stephen D. Mills, former owners of the Mills Brick Yards at North Braddock, have sold the entire plant to Joseph Wolf, of Hawkins Station. The consideration was $50,000. The plant was burned a year ago, and rebuilt, so that it is now practically a new plant.

The Donley Brick Company has been awarded the contract for furnishing the brick to be used in paving the streets of West Washington.

The Alliance Clay Products Company, a new corporation of Alliance, Ohio, will erect a $90,000 brick plant just outside that city in Mahoning County. The clay will be produced just across the county line, in Stark County, on the Kimmel farm, and will be carried over to the plant on a tramway. This peculiar condition is brought about by the advantage gained in railroad facilities. The new plant will be one of the largest in Eastern Ohio.

The Robinson Clay Product Company and the Buckeye Sewer Pipe Company have been awarded the contract for the improvements to be made this spring to the sewerage systems at Akron, Ohio. There will be a large amount of sewer pipe required.

The plant of the Pittsburg-Buffalo Company, at Johnetta, Pa., will be pushed to the capacity for the next six or seven months. The main office has allotted them two large orders to fill, one calling for 5,000,000 standard brick, and the other for 600 car loads of sewer pipe. The number of employes will be doubled.

There is a great deal of interest manifested in Pittsburg over the proposed merger of the indepenendent brick manufacturers, which is now under consideration. There will, of course, be a large number from this part of the State that will probably go into the new combine, which action will serve to protect them from the wanton cutting of prices that has been the custom for several years past, and will, in many ways, aid in increasing their profits. The fire brick companies are the only ones that will be affected by the proposed merger, which will include about sixty plants, with a combined capital of at least $12,000,000 and an annual output of 500,000,000 pieces. F. A. C.

TRADE LITERATURE.

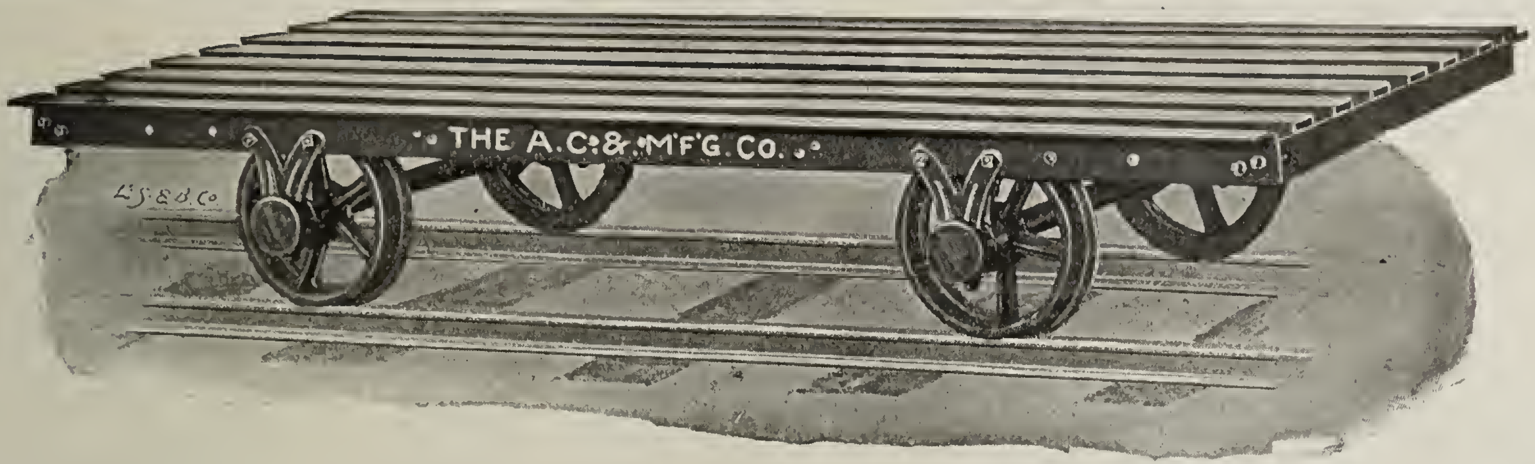
THE EAGLE IRON WORKS, Des Moines, Iowa, has out a new descriptive catalogue of its improved dry plan clay crushers, for which a number of peculiar advantages are claimed, all of which are clearly set forth. The company solicits correspondence from clayworkers having trouble with their clay crushing machinery.

J. C. STEELE AND SONS, Statesville, N. C., have out a novel bit of literature entitled "New Testimony and Additional Evidence," which presents a series of interesting letters from satisfied users of "New South" brick and tile machinery, from which it is very evident that same is proving equal to every demand made upon it. They will be glad to send this and other literature to any one desiring same.

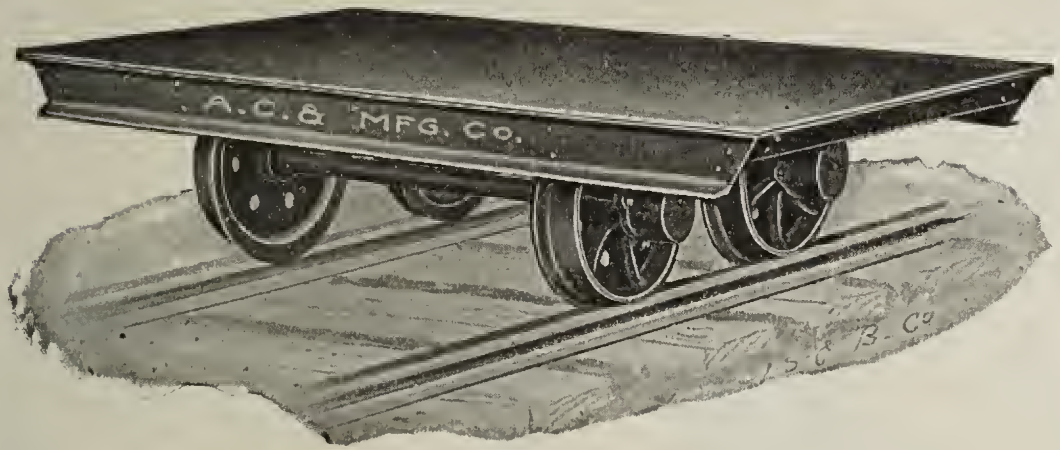
THE L. E. RODGERS ENGINEERING COMPANY, Chicago, Ill., is out with a diminutive, but interesting brochure, the slogan of which is "Waste no heat, Waste no time, Waste no brick," from which it may be readily inferred that it tells of the waste heat system of drying brick.. If you are interested, a postal card addressed to the above firm at 303 Dearborn St., will bring a copy and other instructive literature on the subject.

ANDERSON FOUNDRY AND MACHINE Company, Anderson, Ind., has out a new catalogue exploiting the Berg Dry Press brick machine, the new Anderson soft mud brick machine which is made for both horse and steam power, of the New Departure tile mill, tile cutting tables, clay disintegrators, dry pans, clay pulverizers, clay feeders and mixers and a line of hand power presses and cemnet block machines. Also a line of brickyard supplies, including dump cars, transfer cars, turn tables, etc.

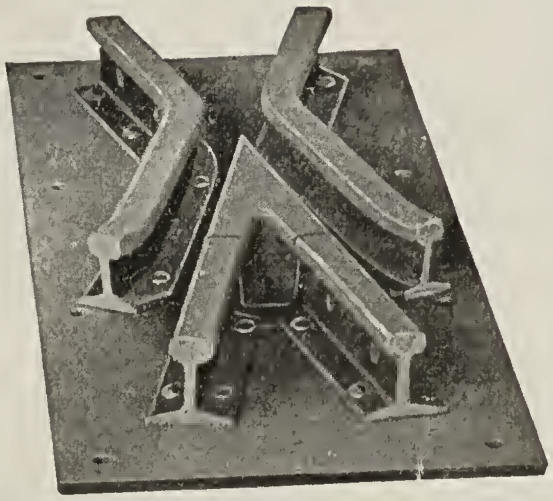
THE WHITE BRICK PRESS is the subject of a beautiful catalogue issued by the American Sand-Lime Brick Company, Great Northern Building, Chicago, Ill. The White press, which is a new candidate for trade favors, certainly looks good. Both front and rear views of the press are shown, also sectional views of the mold box, and other important details. The "White" is especially adapted to the manufacture of sand-lime brick and a high grade of clay brick. The A. S.-L. B. Co. will be glad to send a copy of this book to any reader of THE CLAY-WORKER.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



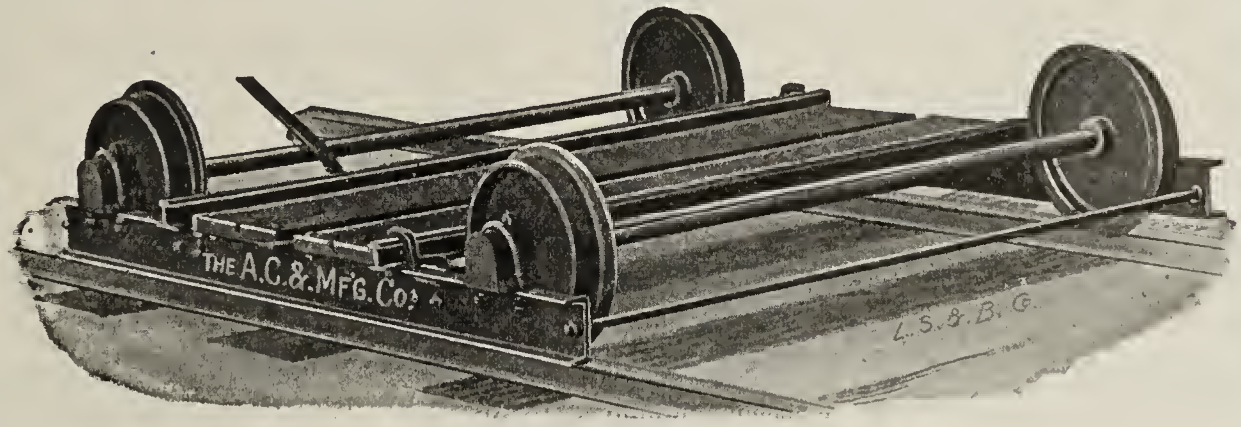
No. 1025. Steel Frog.

The Atlas Car & Mfg. Co.,

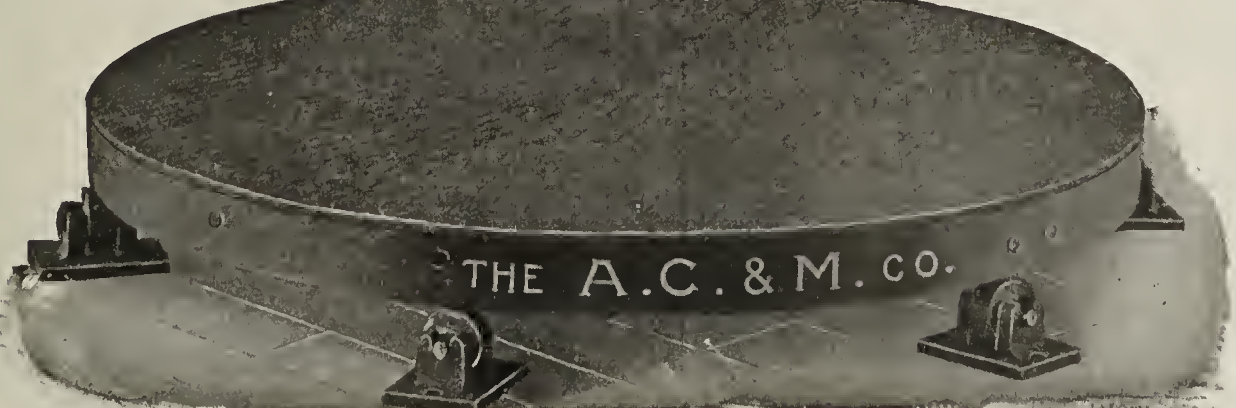
CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc. Also Transfer Cars, Turntables, Clay and Dump Cars.

No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

See Ad on Page 450.

Written for The Clay-Worker.

DETROIT BRICK AND BUILDING NOTES.

BY THE TIME operations commence in the spring, the plants not equipped for winter manufacture will have about exhausted their stock on hand, as there is no abatement in the demand made upon them.

Many plants here have taken quick advantage of the open winter with its pleasant weather, and have been very busy making added improvements to their already finely equipped plants.

Among the larger plants doing an unusual volume of business, greatly taxing them to keep up with demands, are Wolf Brick Co., G. H. Clippert & Bro., Andrew Lonyo, McDonald & Son, Stephen Pratt, Dennis Burke, John S. Haggerty, Jacob Daniel and Michael Downey.

The territory recently annexed to Detroit is now the 18th ward, and the taxpaying element would be greatly pleased and unanimous in their support of Mr. George H. Clippert for alderman and first representative. Other names have been mentioned, but could Mr. Clippert be induced to make the run, he would have the solid support of his brother manufacturers, and his election would be a foregone conclusion.

The Builders' Trade Exchange had one of the most prosperous years in the history of the organization in 1905 and has an enlarged membership, embracing the most prominent brick manufacturers and contractors in the city. At the recent election of officers, Mr. G. H. Clippert was elected to the office of vice-president for the year 1906.

The bill to annex a portion of Springwells to Detroit has become a law, and the following plants are now within the corporate limits of Detroit. Michael Dowey, William H. Proctor, Stephen Pratt, Andrew Lonyo, Larkins Brick Co., Dye & Wolf, Springwells Brick Co., Burns & O'Shea, Wolf Brick Co., Dennis Burke, Clippert & Bro., Schnider Bros., Lonyo Bros. and Sass & Kettle, who have leased and are operating the plant of Greusel Bros.

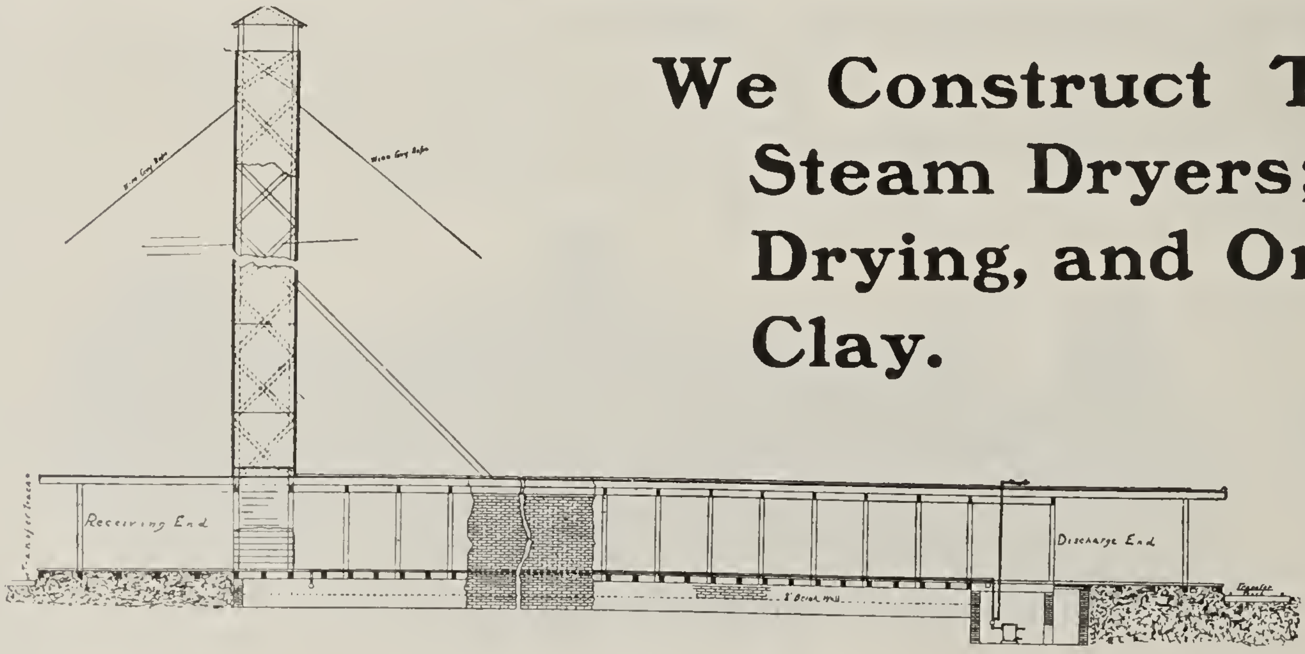
That 1906 will equal if not exceed the year 1905 in the volume of buildings erected seems to be an assured fact. According to the reports made by the architects, the opening of the building season will be the signal for a call upon the brickmakers greater than that of last season, for the reason that prospective builders are holding over until that time. The list includes several schools, factories, warehouses, business buildings and apartment houses, all of solid brick construction.

The year was in every way a most prosperous one for all our Detroit manufacturers. Everyone that I have seen has announced his entire satisfaction with it. True, it was an ideal brickmakers' year in many ways; never before has the market experienced such a demand for brick; reasonable prices prevailed; there were no labor disturbances to mar operations, nor was labor at any time annoyingly scarce.

There is a rumor afloat to the effect that the brickyard labor will this season make demands for a higher scale of wages than was paid last season, and if not speedily granted will inaugurate a strike that will effectively close down every plant. That such a crisis will be reached is barely possible. There may be some who advocate a strike in suport of their demands, but a majority of the men seem to be entirely satisfied with last season's schedule, and will promptly go to work under that scale when the time arrives. What the objecting number will do remains to be seen, and it is not likely they will be able to create any disturbance.

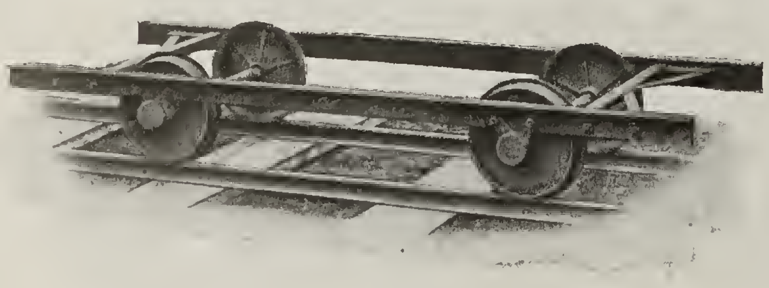
DOROTHY DALE.

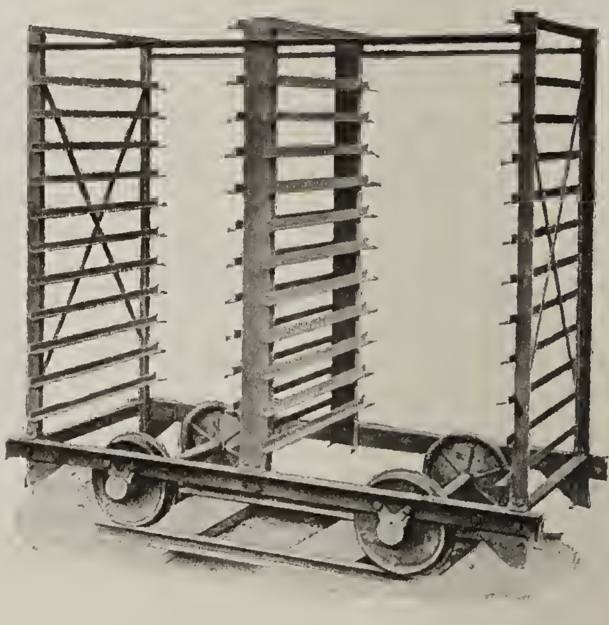
We Construct Two Styles of Steam Dryers; One For Fast Drying, and One For Tender Clay.



Skeleton Cut of Tender Clay Dryer.

WE MANUFACTURE ALL STYLES OF CARS FOR BRICKYARD PURPOSES.





We are in position to make prices that will get your order.

THE HORTON MANUFACTURING CO., Painesville, Ohio.

See Ad on Page 562.

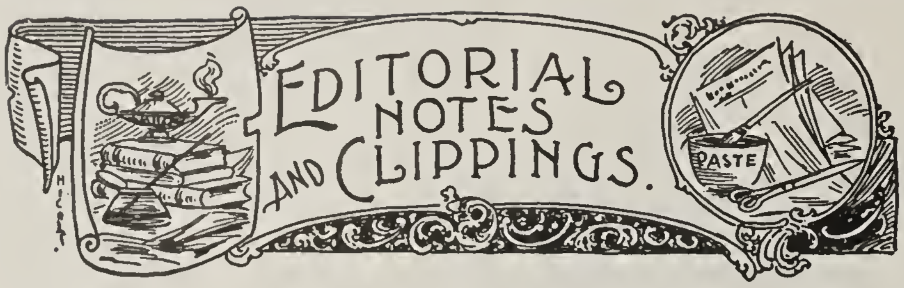
Brick Made Today.
Set in Kiln Tomorrow.
Thoroughly Dry.

Brick Dryers

Work every day.
No loss from rain or frost.
For information and price
write

No expensive buildings.
No stacks.
No fans.
No engine.
No cars.
No tracks.

C. & A. POTTS & CO., Indianapolis, Ind.



EDITORIAL NOTES AND CLIPPINGS.

H. C. Pool will erect a small brickmaking plant at Wendell, N. C.

Thomas Cleary, of Gilford, Ill., will establish a small plant at that place for the manufacture of stiff mud brick.

H. O. Keener has bought the brick plant of C. G. Reese, of Elizabethtown, Pa., and will remove it to Middletown, Pa.

The Taylor-Thomas Brick Company, of Crystal Springs, Miss., has been incorporated by W. B. Taylor, J. J. Thomas and others.

Lorenzo Davis, formerly president of the Riverside Brick Co., of Montgomery, Ala., is looking for a suitable site for the location of a plant in Southern Alabama.

G. S. Pettingil, the well-known brick manufacturer of Lewiston, Maine, broke his right leg recently, and will, as a result be confined to the house for some time.

A. C. Earnest, formerly of Georgia has moved to Tampa, Florida, where he will have charge of the plant of the Tampa Brick Co., formerly owned by the Davis Brick Company.

The Pocono Brick Company, Stroudsburg, Pa., will put in a new dryer which will enable it to run the plant the year around. A number of other improvements will be made in the plant.

The Urbana Brick Company has been incorporated at Urbana, Ohio, with $10,000 capital stock by Patrick Heatherman, John O'Brien, John Heatherman, Christy McCluskey and J. B. Brennan.

The brick and tile plant at Iowa Falls, Iowa, has been purchased by a number of Des Moines gentlemen. Mr. S. J. Galvin, formerly secretary of the Des Moines Brick and Tile Company, will have charge of the plant.

J. M., J. H. and Gilbert Hasbrouck have purchased a large deposit of clay at West Haverstraw, N. Y., and will organize what will be known as the West Haverstraw Brick Co., and erect a plant at once for the manufacture of common building brick.

Josiah Reeves, of West Whiteland, Pa., has discovered a valuable deposit of clay on his farm at that place, which he has had tested with such good results that he will organize a company and erect a plant for the manufacture of common building brick.

S. S. Bray, superintendent of the Washington Pottery Co., at Washington, Mo., writes that his company is now turning out a fine grade of white stone ware. They want a practical man to take an interest in the company and superintend the work. The plant is located fifty-four miles west of St. Louis on the Missouri-Pacific Railroad.

The plant of the Dunbar Brick Company, located at Dunbar, Pa., was completely destroyed by fire February 26, causing a loss of close to $100,000. The plant was fully insured. The plant will be rebuilt without unnecessary delay. This is the third fire the plant has had in twenty years, being completely wiped out each time.

The sand-lime brick plant of Joseph Decarie Sons & Co., of Montreal, Ont., was almost completely demolished by an explosion. The curing cylinder full of brick was blown through the roof and landed in a field 200 yards away, the brick being strewn along the way. The night watchman and his assistant were the only ones in the plant, and the latter suffered a broken arm.

Articles of incorporation have been filed by the Maryland Brick and Supply Company, of Baltimore, Md. The incorporators are Herman L. Garver, George William Smith, D. Edward Kefauver, Grayson H. Staley and E. Schildtknecht. Messrs. Emory L. Coblentz and Oscar B. Coblentz and the incorporators are named as directors of the company for the first year. The capital stock of the company is $50,000. The purpose of the company is to engage in general brick manufacturing and supply business. Its plant will be established along the Northern Central Railway, between Fourth and Sixth streets. The company has purchased the seventy-acre farm formerly owned by Dr. George Johnson, which is near Schley's lime kiln property.

A brick plant is to be erected at Seneca, Kansas, by a company to be known as the Seneca Shale Brick Company.

The Fairfield Brick & Tile Company, of Fairfield, Iowa, has been incorporated by Thomas Louden, and others, with a capital stock of $25,000.

The Malakoff Pressed Brick Co., of Ft. Wayne, Texas, has been incorporated with a capital stock of $50,000. H. G. Bury, and W. A. Davies, of Ft. Worth.

The Richlands (Tenn.) Brick Company has certified to an increase in its capital stock to $50,000. It is proposed to spend $10,000 in improving the plant.

Gustave Hess, formerly of Monroeville, Ohio, has purchased a site at Pierre, S. Dak., on which he will erect a brick plant as soon as the season opens.

The Y. O. C. Brick Company, of Pine Bluff, Ark., has been chartered with $25,000 capital stock. The officers of the company are George B. Yanch, J. W. O'Neal and M. L. Case.

The Piedmont Brick Co., of Lowell, N. C., has been incorporated with $100,000 capital stock by A. D. McLennon, of Charlotte, N. C., and S. Robinson and J. M. Wilson, of Lowell.

The plant of the Hamburg, (Pa.) Vitrified Brick Company which was destroyed by fire just before Christmas is now being rebuilt. It will be a model plant in every respect with a capacity of 45,000 brick per day.

J. Shanfield, Arvada, Colo., writes that the company with which he is connected contemplates the erection of a dry press brick plant of 20,000 daily capacity, and would be pleased to receive catalogues from dry press machine manufacturers.

The St. Elmo Tile & Brick Co. is the name of a new company recently incorporated at Chattanooga, Tenn., for the purpose of manufacturing tile and brick and mining clay and coal. The capital stock is $60,000 and the incorporators are A. W. Poe, H. W. Brown, W. C. Poe, W. E. Reynolds and Emil Wassman. The capital stock is $60,000.

The firm of Roger Moore's Sons & Company, Wilmington, N. C., has purchased eighteen acres of land on the Castle Haynes road near Wilmington, on which will be located a mammoth brick yard, probably the largest in the State. Modern machinery has been ordered, and the plant will be ready for work by August 1. The capacity of the plant will be ten million brick a year.

J. P. Kohl has purchased two-thirds interest in the brick yard of S. W. Sparlin and James Gass, at Barron, Wis. A new company was formed with J. P. Kohl, president; J. F. Kohl, secretary, and F. A. Hulburt, treasurer and active manager of the plant. This company has also bought the yard at Weyerhaeuser, Wis., and will incorporate there. They propose to develop the Weyerhaeuser plant to its fullest extent.

A charter has been granted and bonds issued for the Wyoming Valley Brick Manufacturing Company, of Scranton, Pa., a concern capitalized at half a million dollars, which has secured control of six brick manufacturing plants in this section of the State. The new combination will practically control the brick making business between Honesdale and Brandt, Pa., a stretch of seventy miles, and will be, it is said, by far the largest brick business in Northeastern Pennsylvania. The company is financed by Scranton, Pittston, Brandt and Wilkesbarre men, having for president Mathias Stipp, the well-known contractor and brick maker of Scranton. Thomas A. Dunn, of Wilkesbarre, is treasurer. The directors are Louis Tisch, John T. Lenahan, Frank W. Larned and A. H. Bloom, all of Wilkesbarre, and J. H. Bryden, of Pittston. The six brick plants have a capacity of fifty million brick per annum, and there is a market in the Wyoming Valley for 25,000,000 per annum.

Orders aggregating several million brick have been received during the last few months by the Harbison-Walker Refractories Company of Pittsburg, Pa., from some of the leading industrial establishments of the country. During February the orders were 25 per cent. larger in tonnage than those received in January, and nearly double in September, 1905. The February orders were the largest ever received in the history of the company during the past four years, and those received to date in March are in excess of those received for a corresponding period in February. The contracts come from various quarters, including a number of firms in Pennsylvania, New York, New Jersey, Ohio, Indiana,

[Continued on page 530.]

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than $1.00.

FOR SALE—Four-mold dry press in excellent condition and very cheap.
Address, X,
3 1 d Care Clay-Worker.

WANTED—A permanent position as superintendent with a reliable firm. Understand the manufacture of all kinds of brick.
Address, C. W. F.,
3 1 c Care Clay-Worker.

FOR SALE—One clay hoist, two dump cars, large iron pulleys, heavy line shafting, four foot kiln grates, new and one fire and burglar proof safe. Address, F. G. L.,
3 1 dm Care Clay-Worker.

FOR SALE—E. M. Freese & Co., Union brick machine, special size with pug mill combined. Automatic cutter and friction clutch pulley. Address, EGGERS BRICK CO.,
3 tf d Cleveland, Ohio.

WANTED—To purchase 30,000 second hand wood pallets, not less than 10 inches wide by 33 inches long and one inch thick. In quantities not less than car lots. Address,
INDIANA BRICK CO.,
3 1 d Anderson, Ind.

WANTED—Foreman for soft mud yard, one who thoroughly understands selection of clays and burning. Good position for right man. State salary and references. Address,
SUDBURY BUILDING SUPPLY CO.,
3 1 d Sudbury, Ont.

FOR SALE ADS FOR MARCH.

WANTED—Position as foreman by a practical and experienced man in a brick and tile plant. Understands machinery and the handling of men. State salary, when addressing, P. O. BOX 654,
3 1 cm Care Clay-Worker.

FOR SALE—At Southland, Ga., one business and one residence lot, on road now under construction from Brunswick to Birmingham. In the heart of the famous Elberta Peach region. Owner purchased four lots and will dispose of two at reasonable price. Address, J. E. MINTER.
3 1 d Macon, Ga.

FOR SALE—In good town, well located, an up-to-date brick plant with an abundance of clay and equipped throughout with Fernholtz machinery and three up-draft and one down-draft kilns. Capacity 40,000 per day. For further particulars, address,
INDIANOLA BRICK & TILE CO.,
3 1 cm Indianola, Miss.

FOR SALE—At Marion, S. C., four tilting brick trucks, used only 30 days. Also five dump cars, 1 1-2 yard capacity, made by J. C. Steele & Sons, Statesville, N. C., one pug mill made by H. Brewer & Co., Tecumseh, Mich., numbered No. 1 in their catalogue. This has been used but one season. Address for further particulars.
D. A. LAYTON,
3 1 d Marion, S. C.

WANTED—Machine to work lime pebbles in brick clay. Write giving full particulars, Z. SPINKS,
3 3 dm Whitney, Lake Co., Fla.

WANTED—I am in the market for new sand-lime brick machinery, or would purchase the machinery in a plant already built, if sold right. Address, LOT,
3 1 d Care Clay-Worker.

WANTED—First-class brick setter. One used to setting fire flash. Also first-class shader for fire flashed face brick. Address,
C. C. & C. CO.,
3 1 d Care Clay-Worker.

WANTED—A good practical brick burner, one who is capable and understands burning Haigh's continuous kiln. None others need apply. Address,
THE F. H. WOLF BRICK CO.,
3 1 c Detroit, Mich.

FOR SALE—Cheap, one Penfield Brick and Tile machine, Brewer mold wheel brick machine, Portable engine and brick machine. Good reason for selling. Must go at reasonable price. Address, C. S. S.,
3 1 cm Care Clay-Worker.

WANTED—Large capacity Chambers machine, one 150 H. P. engine and boiler, dryer and steam shovel. Must be in good condition and will pay cash. Address,
R. L. DAVIS,
3 1 c Tampa, Fla.

FOR SALE—A Martin Letter "A" Machine, used only one full season. In first-class condition and as good as new. Will be shipped ready to make brick. This is a bargain it will pay you to investigate. Address, S. B. B. Co.,
3 1 d Care Clay-Worker.

FOR SALE—First-class dry press brick plant, located at Springfield, Mo. Boyd four-mold press, Frost nine-foot dry pan, one Dunlap screen, 25 H. P. engine, 60 H. P. boiler; and trucks to handle 22,000 brick. For sale cheap. Address,
GEO. D. McDANIEL,
2 3 cm Springfield, Mo.

FOR SALE—Up-to-date brick plant, fitted up with Creager machinery, in a prosperous city of 15,000 inhabitants, in southern Illinois. Good residence and farm of 40 acres attached to plant. A splendid opportunity. Only plant in city. Address,
H. L. H.,
1 3 cm Care Clay-Worker.

GOOD CHANCE FOR A HUSTLER.

A sand-lime brick business in the Northwest, been running now two years, wants a man capable of taking full charge of plant. Are agreeable to give the right man stock in the company. None but capable men need apply. Give full particulars, with application, to, BRANDON,
2 2 dm Care Clay-Worker.

WANTED—Some one who is looking for an opportunity to investigate the following: We have ten or twelve acres of extra fine clay, which runs 10 ft. deep. The bank adjoins the railroad thus affording splendid shipping facilities. No opposition and a good market. This land will be sold or leased. For further particulars, address,
W. L. CONELLEY,
3 1 dm Radley, Ind.

WANTED—Competent brickmaker, to manufacture building brick for the season of 1906, on contract. Address, at once,
NANTICOKE BRICK & TILING CO.,
1 3 c Union, N. Y.

WANTED—Superintendent for brick plant; one who is thoroughly capable of superintending the manufacture and burning of both dry press and vitrified brick. Address,
A. B. C.,
3 1 c Care Clay-Worker.

WANTED—Position as manager or foreman of a brick or sewer pipe plant, by a young man who thoroughly understands the business. Western state preferred. Best references. Address, S. P.,
3 1 c Care Clay-Worker.

FOR SALE AT A BARGAIN—One Martin style "A" brick machine and crusher. These machines are practically new, not having made over 200,000 brick; also three Huetteman & Cramer soft mud brick machines cheap.
J. C. McDONALD & SON,
2 3 c Detroit, Mich.

FOR SALE OR RENT—Fully equipped yard for manufacture of red building brick located near good market: capacity about 40,000 per day; about 15 acres of good clay; machinery, dry racks and kilns nearly new; reason for selling, present owners engaged in other business occupying entire time. If unsold, will rent use of same to right party per M. basis. Address at once,
NANTICOKE BRICK & TILING CO.,
3 2 d Union, N. Y.

ARCHITECTURAL TERRA COTTA.

Since the Bronx and Heights booms of 1904-5 there has been a new influx of speculative tenement house builders in these two sections of New York City. People who speculated in lots there and were the last to buy, not being able to dispose of their holdings in vacant property at a profit, were compelled to improve.

The result is that a number of wealthy people, who acquired surplus capital in their various other lines of enterprise, are now in the speculative tenement house building business, giving that line a new and altogether different aspect.

So large is the number of this new class, that, together with the responsible builders in this line of former years, they constitute a very large and desirable set of people to do business with, giving the supply houses a chance to discriminate against the few cheats that might have been left over from former years and crowd them out of the business—a thing which has almost already been accomplished.

Some of the better class of manufacturers of architectural terra cotta are still under the impression of "past events" and consequently give this line—otherwise a quite profitable one—a wide berth, with the result that others, who are in closer proximity to the field of operations and who look with open eyes on "present events" reap the benefit. These latter are actually swamped with orders in this line, so much so, that quite a number of operations of various magnitude in this line have suffered considerably, owing to delays in the supply of terra cotta far beyond the time stipulated in the contracts.

Would it not be advisable for all terra cotta manufacturers to look into this matter a little more closely?

The writer, an experienced terra cotta salesman, a former builder and enjoying the confidence of a number of this class of builders, desires to communicate with some of the above firms with the view of placing a goodly share of this trade.

Address: "T. C.," The Clay-Worker.,
Indianapolis, Ind.

(Continued on Page 531.)

EDITORIAL NOTES AND CLIPPINGS—Continued.

Colorado, New Mexico, and are too numerous to mention individually.

E. Goodwin & Sons, have bought the brick plant of Clarke & Pickard at Minonk, Ill., for $14,000.

The Delaware Brick & Terra Cotta Co., has been incorporated at South Vineland, N. J., with a capital of $50,000, by Samuel, George and Cecil Fulton.

J. N. Douglas and Bret Douglas, his son, are making preparations to start a brick plant at Fort Pierre, S. Dak., as soon as weather conditions are favorable.

A building used for storage purposes by the A. H. Hews Pottery Company, Cambridge, Mass., was burned recently, causing a loss of $8,000. The fire is supposed to be of incendiary origin.

J. H. Legg & Son are starting a new and modern brick plant at Calhoun, Ga., for the manfacture of fire brick. They are experienced brick manufacturers so there is no doubt as to the success of the new venture.

J. Frank Applebach, Samuel F. Stover and others of South Bethlehem, Pa., have applied for a charter for the South Bethlehem Brick Co. They expect to build a new plant on the site of the old Benner brickyard site.

Dr. W. B. Hamby, J. C. Fain and Mr. Sloan, all of Atlanta, Ga., have purchased the plant of the Calhoun Brick Company, Calhoun, Ga. Mr. Fain will be general manager and Mr. Sloan superintendent, having formerly held similar positions with the Palmer Brick Company, of Atlanta.

The C. P. Merwin Brick Co., Berlin, Conn., suffered a slight loss recently by fire which started in one of the kiln sheds, caused by a spark from a passing engine. Fortunately the fire was discovered before it had gained any headway and was extinguished by the workmen who live out near the plant. The loss was entirely covered by insurance.

The New York Blower Company has issued lately a condensed catalogue of its goods, which is just the thing for a busy man who has no time to look through a complete set of catalogues. It shows illustrations of all styles of fans and heaters made by this company, besides giving in tabulated form the principal dimensions and prices. The New York Blower Company will be pleased to send same to anybody applying for it to 25th Place & Stewart Ave., Chicago, Ill.

The Laclede Fire Brick Manufacturing Company, St. Louis, Mo., has filed suit in the Circuit Court against the city, Mayor Wells and City Marshal Weinbrenner, to prevent the opening of Sulphur avenue through its property, which extends from Wilson avenue to Manchester avenue, adjoining the Missouri Pacific and Frisco tracks. The Laclede Company's plant is located on the property, which comprises 36.47 acres, in two adjoining tracts. The proposed street takes fifteen feet from each tract: On the strip is located a kiln and part of a frame shed, valued at $3,500. The total improvements on the property are valued at $100,000. It is alleged that the City Marshall, claiming to act under an order issued by Mayor Wells January 29th last, and signed by City Councelor Bates, threatens to tear down and remove the improvements from the strip and take possession of it, ejecting the plaintiff. The court is asked to restrain this from beng done.

The Weaver Brick Company's plant at Utica, N. Y., was damaged to the extent of $1,500 by fire March 11, which started in the dryer. The plant will be rebuilt at once.

Wm. J. Murphy, the senior member of the Murphy & Lorimer Brick Company, died at his home in Chicago, Ill., March 15th, after an illness of only four days. He was 38 years old and leaves a wife and two children.

The Hot Springs Brick, Tile and Pottery Co. has been organized at Hot Springs, Ark., with William Francis Keates, of Owensboro, Ky., president and manager. A plant with a capacity of 40,000 brick daily will be erected at once.

The Saugerties Brick Co., Saugerties, N. Y., has been incorporated with $100,000 capital stock. The incorporators are Wm. H. Parr, J. F. Cryer, Wm. H. Merritt, Joseph Lane and Edward E. Hargrave, all of New York City.

The Zachary Brick Company has been organized at Zachary, La., by Albert Strenske, J. B. Loudon, Herman Fields and others. The three gentlemen named comprise the officers of the concern. The company has a capital stock of $15,000.

Mr. A. W. Penny, general manager of the Marion Brick Works, Indianapolis, has gone to California for a brief and well deserved vacation. During his absence, his able assistant, Mr. D. Lincoln, assumes the duties of the office, and will do 'em good.

The plant of the Fort Wayne Pressed Brick Company, at Fort Wayne, Ind., sustained a loss of $10,000 from a fire which started in the dryer. The burned portion will be rebuilt at once, as the company had orders on hand to keep the plant running steady until August. The plant was just starting up for the season.

The Alex. A. Scott Brick Co., of Knoxville, Tenn., has just closed a contract for ten million brick to be shipped to and used by the Champion Fibre Co., Canton, N C., where this Company is erecting a mammoth pulp plant. This is probably the largest single order ever secured by a southern brick plant. The Scott Company had sharp competition from large brick concerns at Ashville, N. C.,, only thirty miles from Canton, while Knoxville is one hundred and seventy miles. The difference in the freight rate in favor of the Ashville market was more than fifteen thousand dollars. The Alex. A. Scott Brick Co., has one of the most up to date plants in America, and Mr. Alex. A. Scott. Pres. and Gen. Mgr., makes the statement that he is making a number one, first-class building brick for less money than any other plant in the United States, and invites his fellow brickmakers to come and see for themselves. Mr. Scott's new process for handling and drying is in operation on his new yard; with this process the brick are delivered with belts direct from machines into kilns where they are dried and burned without moving them, thus effecting a saving of 65 per cent. of the labor of handling the brick after they leave the machine, which accounts for his company securing the large North California order.

The Spring Rains

will leave your clay pits full of mud and water.

The Pulsometer Steam Pump

will drain them, no matter how muddy or gritty the water. It requires no engine, belt, oil or packing; only a steam pipe from the boiler, and operates equally well suspended as set stationary. Over 25,000 now in use. Send for catalogue.

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CLAY LANDS FOR SALE.

Flint clays, shale, soft fire clays and coal. Apply to
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4 tf d Shawmut, Elk County, Pa.

FOR SALE—Brick yard in thriving city of 50,000 people. Capacity 25,000 brick per day. Address Box 729,
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WANTED—A good, hustling foreman. Will pay a good salary. Address
A. C. OCHS,
2 2 c Springfield, Minn.

FOR SALE CHEAP—A Monarch brick machine, only used a short time. Will entertain any reasonable offer.
J. FRANK BOYER,
3 1 dm Norristown, Pa.

FIRE CLAY LANDS.

FOR SALE—500 acres land underlaid with fire clay and coal, which can be mined cheaply. Near main line of N. Y. C. & H. R. R., in Pennsylvania. For lease on royalty at low price per ton. Address owner,
Box No. 308, Williamsport, Pa.
2 4 cm

FOR SALE—Two seven foot Arnold-Creager tempering wheel and six ball bearing brick barrows. Used but two weeks last Spring. A bargain. Address.
JACKSON FIBRE CO.,
2 3 cm Bemis, Tenn.

FOR SALE CHEAP.

One Iron h. p. soft mud machine.
One Iron steam power soft mud machine.
One Hand repress.
One disintegrator.
One 35-h.-p. Boiler and one 25-h.-p. Engine.
Second-hand dryer cars for sale cheap.
All in first-class condition.
THE HORTON MFG. CO.,
1 tf d Painesville, O.

BARGAINS IN ENGINES AND BOILERS AND GENERAL MACHINERY.

IMMEDIATE DELIVERY. REBUILT AND GUARANTEED.

ENGINES—1 28″x60″ Wetherill Corliss, rolling-mill type. 1 28″x48″ Cooper Corliss. 1 26″x60″ International Engineering Co. 1 18″-34″x36″ cross-comp. Fitchburg. 1 16″x36″ double Fitchburg automatic engine. 1 18″x42″ Watts Campbell Corliss. 1 16″-27″x16″ Westinghouse compound. 1 12″-20″x12″ Westinghouse compound. 1 12″-22″ x20″ Porter-Allen. 1 12″-20″x16″ McEwen, center-crank. 1 16″x16″ Ball & Wood automatic. 1 16″x 16″ Greene. 1 15½″x15″ Armington & Sims automatic. 1 15″x30″ Buckeye automatic. 1 15″x20″ Russell, four (4) valve. 1 15″x18″ Taylor-Beck. 1 14″x20″ Russell, four (4) valve. 1 14½″x15″ Armington & Sims automatic. 1 14″x24″ Payne automatic. 1 13″x22″ Buckeye automatic. And many others. Stock is constantly changing.

BOILERS—Six (6) 150 H. P. vertical Manning boilers, 135 lbs. steam. One (1) 250 H. P. Babcock & Wilcox water-tube boiler, 150 lbs. steam. Two (2) 180 H. P. National water-tube, practically new. 1 72″x18′ horizontal tubular. 1 72″x16′ horizontal tubular. 6 66″x18′ horizontal tubular. 4 66″x16′ horizontal tubular. 2 60″x18′ horizontal tubular. All first-class, high pressure. Steam Pumps up to 12″ suction. Full assortment of Gas and Gasoline Engines. Largest assortment of Dynamos, Iron and Wood Working Machinery.

Send for Catalogue, just issued.

FRANK TOOMEY,
Nos. 127-131 N. 3d St., Philadelphia, Pa

FOR SALE.

Write E. D. Clark & Co. for new and second-hand machinery, brickyard supplies of all kinds.
7 tf d Morenci, Mich.

FOR SALE—A well equipped yard; good market; good prices; good clay. Direct waterway to the Gulf. Will sell, lease or take interest. Address,
BRICK,
2 tf dm Care Clay-Worker.

FOR SALE OR EXCHANGE—Good 20,000 capacity brick and tile plant, finely located for business. Owner will sell at a bargain, or will exchange for good real estate or other property. Address LAND,
2 4 dm Care Clay-Worker.

FOR SALE—Two Hummer 30,000 capacity brick machines manufactured by J. D. Fate Company. They are in good condition, and were replaced by larger machines made by the same people. Ludowici Roofing Tile Company.
10 tf d Ludowici. Liberty Co., Ga.

FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.
THE T. B. TOWNSEND BRICK AND CONTRACTING COMPANY,
1 tf d Zanesville, O.

FOR SALE CHEAP.

One 150-h.-p. Westinghouse Engine in good order. Is connected to steam pipe and can be seen rnnning at onr works. Address,
POTOMAC BRICK CO.,
1 6 d 1413 G St., N. W., Washington, D. C.

FOR SALE—100 iron cars with iron racks attached for drying brick. One automa sanding machine. One New Haven soft mud brick machine. 20,000 wooden pallets for brick drying on iron cars. Iron trackage, shafting, pulleys. 35 H. P. engine. 50 H. P. boiler. We have discontinued the manufacture of brick and will sell the above property at a great sacrifice.
Address, OGDEN BRICK CO.,
3 1 dm Binghamton, N. Y.

WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent npon success.
Address J. J. KOCH,
9 tf L 3325 Caroline St., St. Louis, Mo.

WANTED—Head burner for vitrified brick plant, must be able to furnish satisfactory references. Address, D. E. F.
3 1 c Care Clay-Worker.

FOR SALE—A brick yard requiring small capital. A special bargain lies in this yard. Address, RED CLAY.
3 1 dm Care Clay-Worker.

WANTED—A first-class man who thoroughly understands the manufacture and sale of machinery for sand-lime brick. A very desirable opening for the right man. Address
3 2 dm Box 22, this office.

ENGINES AND BOILERS.

A large assortment of new and rebuilt engines and boilers, all sizes and styles, at low prices. Send specifications of your requirements and we will make you a special proposition.
THE RANDLE MACHINERY CO.,
1 tf dm 1735 Powers St., Cincinnati, Ohio.

WANTED.

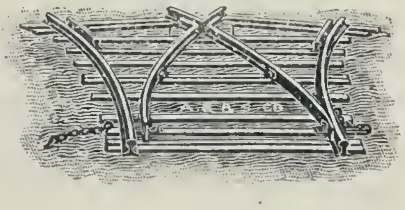
Manager for Brick Plant, at Thurber, Texas. Capacity of plant 100,000 dry pressed and 75,000 paving brick daily. None but men with large experience, ability and sobriety need apply. Address W. K. Gordon, General Manager, Thurber, Texas.
2 3 d

TO BRICK MANUFACTURERS.

An opportunity to make some money. I have on my farm a quantity of shale suitable for the manufacture of dry pressed brick. Would like to correspond with parties who would take it up and work it.
Address R. H.
2 3 cm Care Clay-Worker.

FOR SALE.

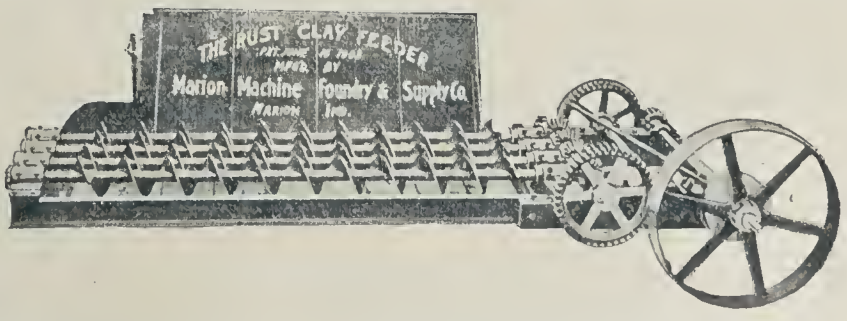
One Stedman 40-inch Disintegrator, cost $600; is in first-class condition; was installed and used for one week. Will sell at great sacrifice.
The Charles Mill Supply Company,
15 So. William St.,
7 tf dm New York City.



SWITCHES FOR SALE.

Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.
THE ATLAS CAR & MFG. CO.,
7 tf d Cleveland, Ohio.

A New Clay Feeder and Mixer.


THE RUST CLAY FEEDER
MFGR. BY
Marion Machine Foundry & Supply Co.
MARION IND.

Send for full descriptive circular.

The Rust Clay Feeder has been brought out in response to a better method for mixing and feeding clay in brick, tile and all clay working plants. By the use of this feeder the services of two men are entirely dispensed with, the clay being dumped into hopper of machine from car is automatically fed into the disintegrator. The spirals draw their supply evenly from all parts of the hopper, mixing the clay perfectly, which tends both to improve and increase the output of the plant.

Marion Machine, Foundry and Supply Co., Marion, Ind.

FOR SALE, WANTED, ETC.

FOR SALE.

Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," $3,00—a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," $5.00—tells how to glaze and enamel brick and gives valuable receipts. "Sixty Years a Brickmaker," $2.50—a chronicle of the experiences of a successful veteran brickmaker and able writer. "Vitrified Paving Brick," $1.00—tells all about the best materials for and methods of manufacturing paving brick. "Tables of Analyses of Clays," $1.00—gives the analyses of many American and European clays. Any or all of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address,

T. A. RANDALL & CO.,
Indianapolis, Ind.

THE BURNING QUESTION.

Is your burning up to the highest standard?

Are you getting the best results from your kilns?

If Not Consult
ROBERT TWELLS, WALNUT HILLS, ILL.

He has had many years of practical work as superintendent and head burner in some of the largest paving and building brick plants in the country. If you are new in the business, or a machine or patent kiln man, and need temporary assistance, you will do well to communicate with him and secure a date.

EXPERT WORK,
WRITE FOR TERMS.
FIRST-CLASS REFERENCE,

See additional ads. under Table of Contents.

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P. O. Box 1712. 205 Pearl Street.
NEW YORK.

Sole Importers in the United States of the

Precipitated K.B. C.F.H. Carbonate of Barytes

The only preventative for scum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

Circulars and Particulars on Application.

Chattanooga Paint Co.,

Chattanooga, Tenn.

Manufacturers of

Red Oxides for Brickmakers' Use.

Eclipse Mortar Colors,

Red, Brown, Buff, Black.

26-foot vein, covering 200 acres. Located on Chicago & Alton R.R., 70 miles north St. Louis. Miners and shippers of red, white mottled and yellow buff clays for all varieties of manufacture of front, face, enameled brick and terra cotta work, including the encaustic tile, semi-porcelain, pottery and fire brick, fire clays; also red mineral paint clay.

Hicks Clay Co.

Grand Prize and Gold Medal, St. Louis World's Fair, 1904.

Prices and samples free upon request.

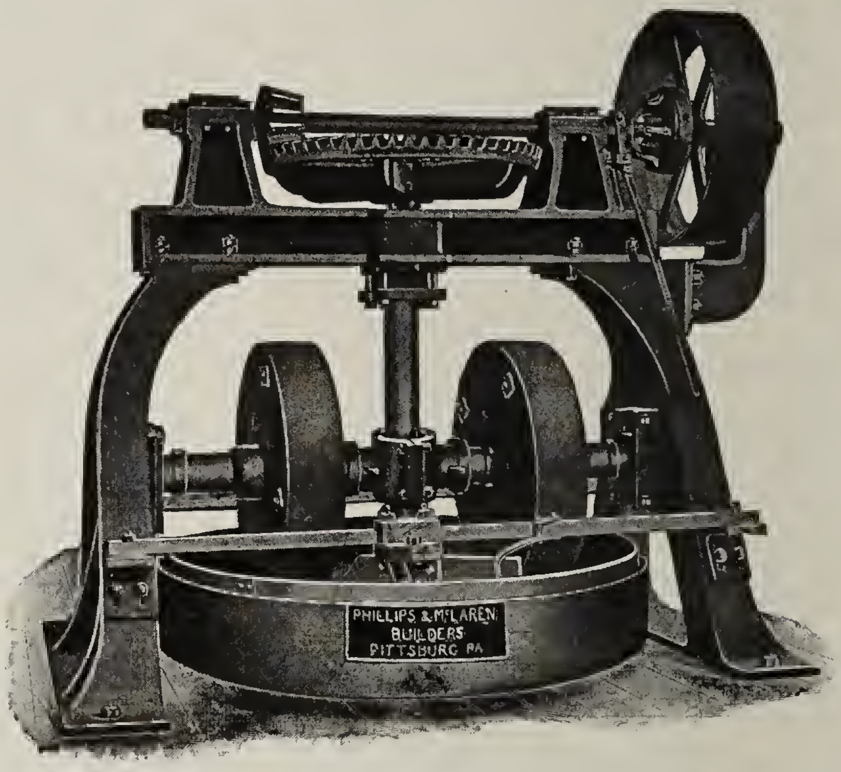
Correspondence solicited.

CHARLES T. HICKS, Pres., Drake, Ill.
H. C. WORCESTER Sec'y, Roodhouse, Ill.

Pittsburg Standard Dry and Wet Pans and Crushers

For Brick, Terra Cotta, Sand, Cement, Etc.

When writing for Prices, state kind of Clay or Material to be ground and capacity required.



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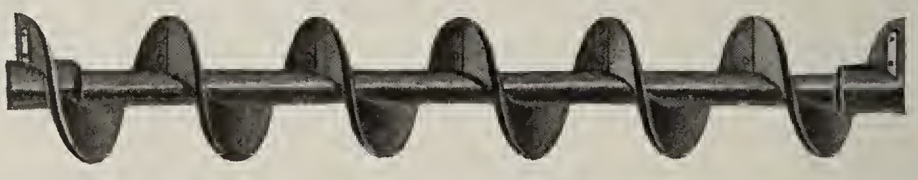
We Manufacture These Buckets

In All Styles, Sizes and Gauges.
Orders Shipped Promptly.

SALEM BUCKETS

COLD ROLLED SPIRAL STEEL CONVEYOR.



We Also Make Shafting, Pulleys, Friction Clutches, Sprocket Wheels, etc.

WEARS BEST, Costs No More.

WE MAKE this Conveyor in All Styles and Gauges.

SKILLIN & RICHARDS MFG. CO., CHICAGO.

Excellent Industrial Locations

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QUEEN & CRESCENT
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And
Southern Railway.

Timber Lands. Fine Blue-Grass Farm Land. Iron and Coal Mines.

Railroad facilities to all points South, North, East and West.
For information address
W. A. GARRETT, Gen'l Manager,
W. C. RINEARSON, Gen'l Pass'r Agt.,
Cincinnati, Ohio.

Next Summer's Vacation

Plan now on seeing Yellowstone Park, "Wonderland of the World." The finest coaching trip in America. The greatest of Nature's wonderful phenomena on every hand. Geysers, mud pools, tinted terraces, magnificent mountains and bracing and invigorating mountain air. The best of hotels and accommodations. Write for "Wonderland 1906," six cents. It tells about the Great Northwest and Yellowstone Park.

Go Via GARDINER GATEWAY, the Official Entrance,

AND THE

Northern Pacific Railway

St. Paul and Minneapolis to the Pacific Northwest.

NORTHERN PACIFIC
YELLOWSTONE PARK LINE

A. M. CLELAND.
General Passenger Agent,
St. Paul, Minn.

Write for particulars to
C. P. O'DONNELL,
42 Jackson Place, Indianapolis, Ind.

Written for The Clay-Worker.

MILWAUKEE BUILDING NEWS.

A REMARKABLY mild winter has made it possible to continue building operations in Milwaukee with less interruption than for many years past, if, in fact, ever before in the history of the city. There was no zero weather in January, almost none in February and there has been no snow all winter to speak of. Many large buildings are under construction and many others about to be started. The report of the Building Inspector's office for the month of February shows that 152 building permits were issued—amounting in value to $337,582, as compared with 96 permits valued at $278,326 for the same month last year, an increase of 56 permits and $59,256 in valuation.

The Charles Kraatz Brick Company, of Milwaukee, is largely adding to its capacity by increasing its capital from $25,000 to $100,000. Edward A. Uhrig is president and treasurer of the company and Emil M. Kraatz, secretary. Mr. Uhrig is president of the Milwaukee-Western Fuel Co., a director of the first National Bank and president of the Citizens Business League, one of the organizations devoted to the advancement of Milwaukee.

The Fond du Lac Pressed Brick Co., of Fond du Lac, Wis., is doing a very large business. It has recently installed a new 150 H. P. Corliss engine at its works and is constantly increasing its output. At a recent meeting of the board of directors, Joseph Hutter, Sr., was elected general manager and superintendent and is now managing the manufacture and sale of the product. Mr. Hutter is a member of the Hutter Construction Company, whose affairs will in the future be conducted by Joseph Hutter, Jr., and George Hutter.

The new State Normal School, to be built at Platteville, Wis., is to be constructed of white brick. The contract has been let for the white sand-lime brick manufactured by the Janesville (Wis.) Granite Brick and Stone Co.

Robertson, Ross & Co., of Eau Claire, Wis., manufacturers of cement brick, are making plans to manufacture on a large scale this spring. Their bricks have been thoroughly tested and, they say, are meeting all the requirements.

The annual report of Edw. V. Koch, building inspector of Milwaukee, has just been issued and contains interesting statistics relative to building operations during the year 1905. The total value of permits issued during the year was $9,806,729, an increase of $1,674,964 over the preceding year. During the year eighty permits were issued for brick cased buildings, valued at $447,335, and 169 permits for brick and stone buildings valued at $3,381,100. Permits were issued during the year for the erection of ten churches at a total valuation of $231,200. Thirty-five apartment buildings were erected, to accommodate a total of 286 families, and 553 flats for two families were erected, showing a large increase in the number of large apartment buildings and flats.

THE NORTH DAKOTA DRAINAGE ASSOCIATION ORGANIZED.

The following officers were elected at the late meeting of a mass convention held at Grand Forks, North Dakota, to consider the drainage interest for the State. A permanent organization was effected:

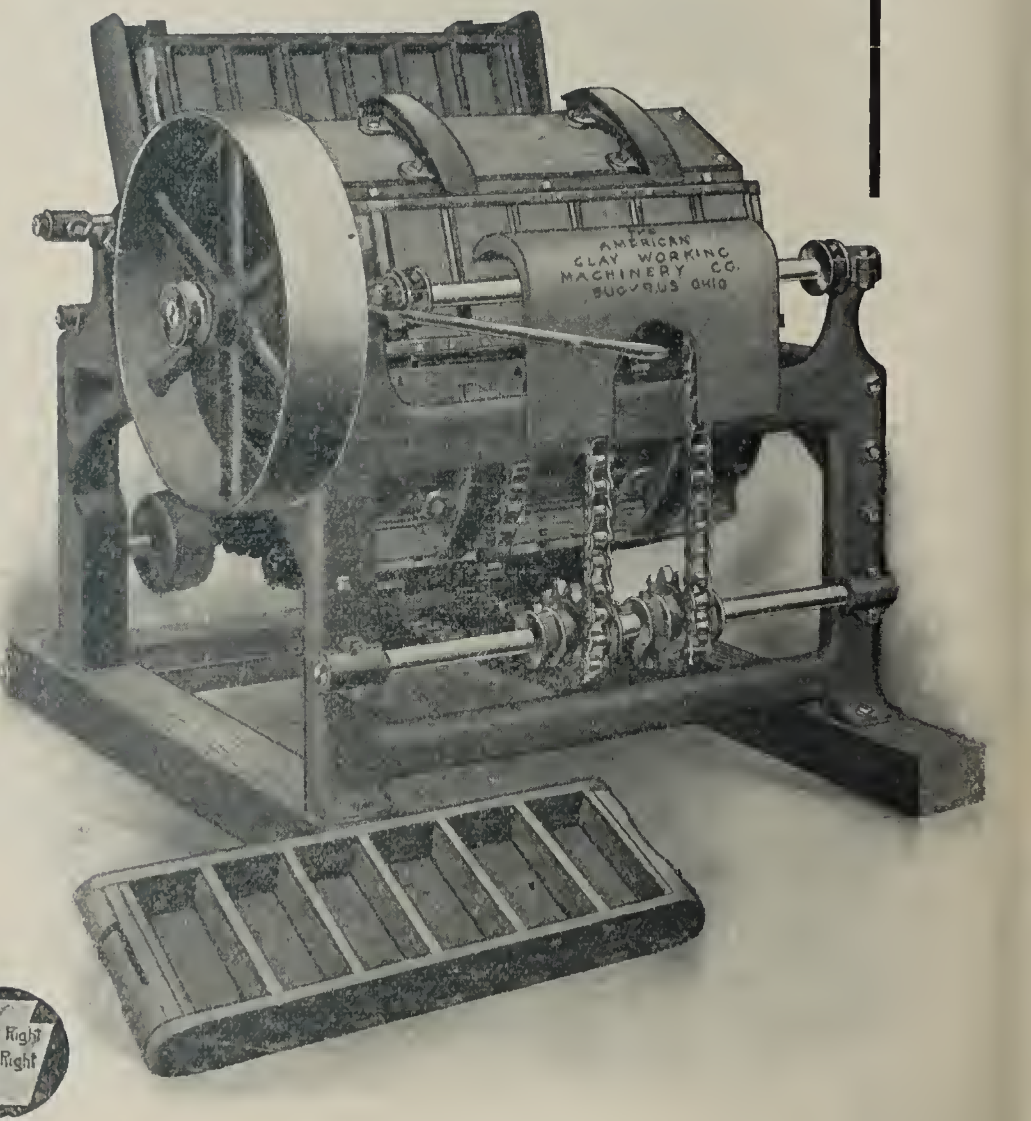
President, F. Cashel, Grand Forks; Vice-Presidents, F. L. Goodman, Trail County; Treadwell Twichell, Cass County; E. J. Lander, Grand Forks; Geo. E. Wallace, Richland County; N. Upham, Walsh County; W. J. Louden, Pembina County; G. E. Blake, Sargent County; Secretary, F. A. Brown, Grand Forks; Treasurer, Dr. J. D. Taylor, Grand Forks.

Soft Mud Brick Machinery

The Mold Sander is only one of our many machines for the profitable manufacture of Soft Mud Brick. This Sander insures perfectly sanded molds, good clean sand, no waste, no labor and no expense to operate. Put a truck load of empty molds on the receiving table and the machine does the rest, delivering perfectly sanded molds ready for use. Our other Soft Mud Brick machinery is equally good. Our Eagle Horse Power Brick machine has an easy capacity of 10,000 to 15,000 excellent brick per day. The Eagle Steam Power will make 15,000 to 20,000 and all good ones. Buy a Horse Power Eagle now and when the demand requires it we will furnish the parts to make it a Steam Power machine. Our vertical Combined Machine and Pug Mill for Soft Mud Brick will easily make 30,000 to 40,000 brick per day. Fifteen years of universal satisfaction stands behind these machines. Every machine and appliance for Soft Mud Brick is included in our line. We build also a full line of Dry Press, Stiff Mud, Sand-Lime and Pottery Machinery and all varieties of Dryers. Write concerning any needs you may have.

The American Clay Machinery Co.,
Bucyrus, Ohio, U. S. A.

Built Right Run Right



THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

Vol XLV. INDIANAPOLIS, IND., APRIL, 1906. No. 4.

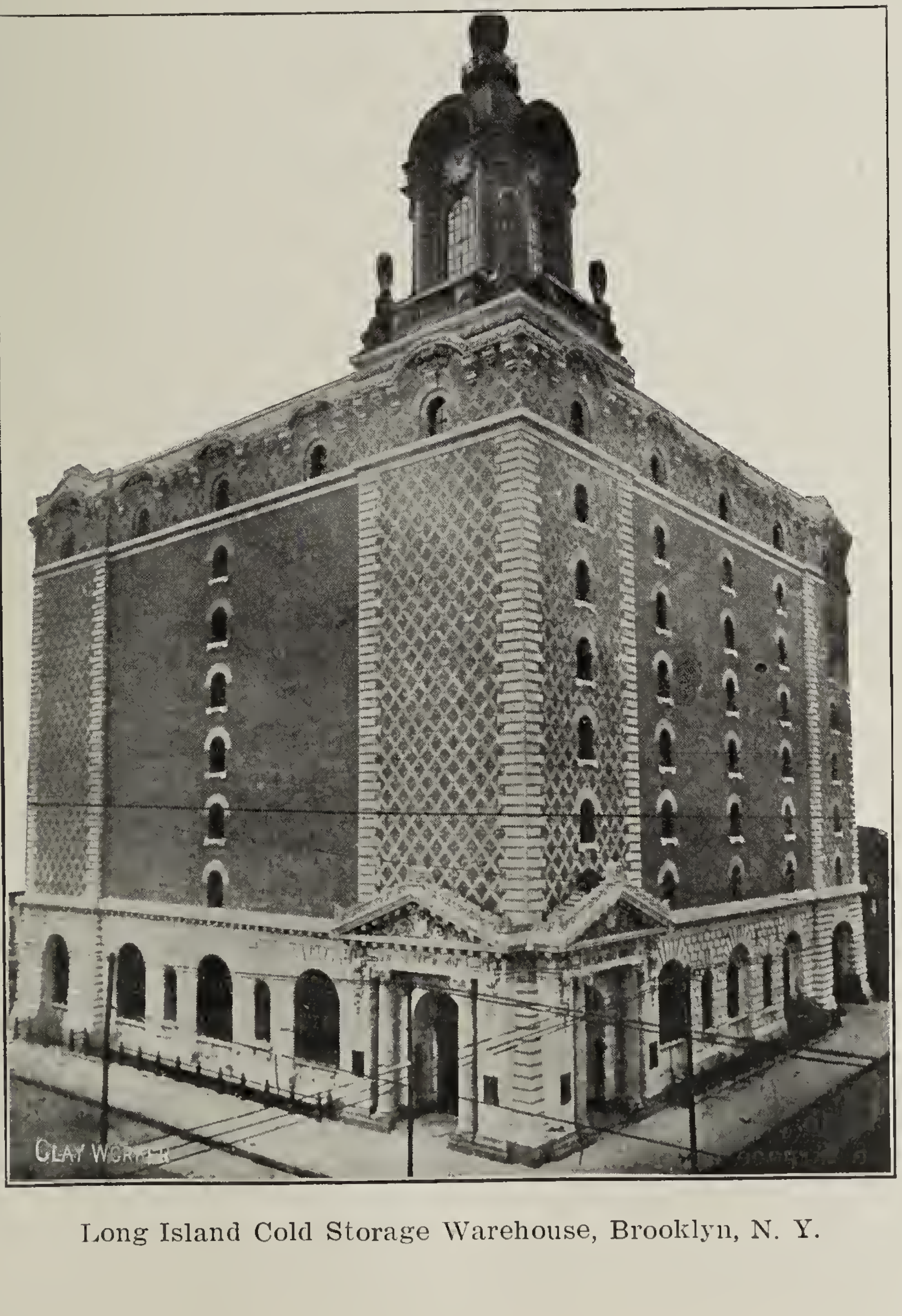
Written for THE CLAY-WORKER.

BEAUTIFUL BRICK ARCHITECTURE.

Notable Examples of Artistic Work in the Construction of Buildings with Brick and Terra Cotta.

THAT A BUSINESS building, even one erected for such a prosaic purpose as the storage of different articles of merchandise, need not be unattractive, has been proved many times. The tendency in the latter days is to make these buildings better and handsomer than they have been heretofore and some of the recent ones are marvels of the architect's art.

Where such a building is made of brick it is possible to do this at comparatively small cost. In fact, buildings which are constructed of brick and terra cotta can be made as massive and as rich looking as any stone work that can be procured. The constant improvement in these structural materials, and the careful study which is being given to such construction work by architects now are working wonders in this direction. It is no doubt true that architects would do a great deal more along these lines if they were encouraged to do so by the firms or individuals erecting the buildings. A little educative work in this direction would be to the advantage of the brick manufacturers and others interested in disposing of the material required in this character of construction.



Long Island Cold Storage Warehouse, Brooklyn, N. Y.

Builders in Brooklyn, N. Y., are devoting a good deal of attention to erecting beautiful as well as useful buildings. Since the high price of lumber has forced builders to seek for some other material, and brick has become more common, there has been a tendency developing to adopt striking designs and appropriate ornamentation. This is not so easy in wood, but in brick or terra cotta it is possible to carry out any scheme which the architect may desire.

It seems as though this feature of structural work is more pronounced in Brooklyn than it is in some other cities, partly, perhaps, because of the force of example. When one builder sees what can be done with a given material he begins to wonder if he can't do as well, and an order to his architect is quite likely to result in some changes from what might be considered the model for his ideas.

One of the most attractive of the recent buildings about New York is the Long Island Cold Storage Warehouse in Brooklyn. Helmle & Huberty are the architects and they have constructed a very creditable building. Not only is it admirably adapted for the purpose for which it was designed, but it is architecturally attractive. Brick pattern work is being used rather more than it has been as a decoration and the pattern work on this building is a particularly happy combination.

The centres of the diamond shapes, which form the pattern are of old gold mottled brick, while the outline is in buff. The combination is extremely pleasing and is one of which one would never tire. The patterns are placed upon all four corners as shown in the illustration. The remainder of the building is of dark colored brick.

The trimmings of the rest of the building are in light terra cotta to match the color of the decorative brick, and the effect is such as to enhance the decorative qualities of both features.

Sufficient attention has not been given to these things in the past. Architects have been content to erect a plain building and let the decorative features remain for future generations to work out, but they are discovering now that decorative features add measurably to the quality of the work they are doing and are of much benefit to them personally. Moreover, it is only recently that they have really found out the decorative qualities of different colored brick and terra cotta. This building is a good example of the possibilities and is a good suggestion for other architects to follow.

The brick for this building was furnished by the Sayre & Fisher Company, of New York, and the terra cotta was supplied by the Perth Amboy Terra Cotta Company, of New York and Perth Amboy, N. J.

Another building in Brooklyn which has many handsome architectural features which commend it to those who care for the artistic and attractive in buildings is the Heights Casino on Montague Street. For example, the gables reproduce the old Dutch style of construction which prevailed on Manhattan Island and vicinity three hundred years ago. These gables are decorated with light colored terra cotta. The trimmings about the doors and windows and the corners in the decorative panels worked out on the sides of the building are all light terra cotta. The diamond-shaped decorations just below the frieze are of dark terra cotta to contrast with the light. The effect is extremely pleasing and worthy of consideration by any one who cares for a handsome and artistic design in such a building, or one which can be similarly constructed.

William A. Boring was the architect, and certainly no criticism can be made of Mr. Boring's work. Burton.

Written for THE CLAY-WORKER.

SOME THINGS I DON'T KNOW ABOUT BRICKMAKING.

Second Paper.

AS WE MANUFACTURE both brick and drain tile, we adopted the plan of setting a few four-inch tiles in that part of the kiln most subject to discoloration, and found this method of great benefit. To be sure, this method of mixing the two wares has its drawbacks, but we had trouble to get our setters to proportion the spaces between the bricks properly so as to give sufficient draft in that part of the kiln—and a few tiles solved the problem.

We have thus practically overcome the difficulty of whitewashing in the kiln, but we offer no scientific explanation of the relation of our methods to the results obtained.

There is one method that we have never tried, but we believe that where it could be introduced it would show good results. We refer to forced draft by fans during the period of watersmoking.

We would summarize our methods as follows:

1. Thorough drying in dryer.
2. Careful watersmoking with wood, if possible, but good lump coal will prove a good substitute.
3. Start to raise heat with the furnace doors wide open, thus permitting a great deal of air to pass through the ware as the last free moisture is being removed.
4. In building kilns, provide for more draft than would be required for ordinary burning, using full force of draft during the earlier stages of burning, and then damper down to suit requirements.
5. If it is inconvenient to use drain tile in connection with brick, set brick more open in the parts of the kiln most subject to whitewash.

We believe that if these simple directions be followed, that the results will be good. A little experience about applying these remedies will soon show the burner all that is necessary in the matter. It will perhaps take more fuel to follow these methods than to hurry things up a little, but where good color is a consideration it pays to go after the color even if there is a slight increase in cost.

There is one phase of this trouble of whitewash which we have never been able to cure. Sometimes during the spring of the year, discoloration shows upon the surface of the brick walls where brick of first-class colors were used. This white scum always disappears as summer advances, and the walls get thoroughly dry. We can show the same trouble on a pile of extra good colored brick which we piled in the weather last fall. This spring they look very unsightly, but we know from experience that this discoloration will leave them when the sun dries them thoroughly. We know nothing of the cause of this, nor can we suggest a remedy.

Swelled Centers.

This trouble was a greater puzzle to us than the first, for it would put in its appearance no matter what kind of fuel we used, or whether the bricks were well dried or damp, but there was more trouble when we set the bricks damp. We speak of this as a second trouble, when in point of time it ranks before whitewash. As stated above, we were not troubled with scum when using wood, but our first introduction to swelled centers was before we had ever used coal in our kilns. The first brick we made were end cut, large and thick, measuring 9 x 4¼ x 2⅝. They were difficult to dry in our natural air dryer, and gave us a great deal of trouble from breakage and swelled centers. We partly remedied this by getting a side-cut outfit, and making bricks only 2¼ inches thick. Since then in making different wares, we have noticed that the thicker the wares, the more inclined to form swelled cores.

We changed our clay bank soon after putting in our side-cut machinery and swelled centers disappeared from that time, so that for a long time we were not sure whether the remedy was change of method or change of clay bank. But in a few years we were forced to go back to our old clay bank and again we were up against our old trouble. We were now sure that at least part of the trouble lay in the chemical or physical constituents of our clay. But we could not change the clay, and nothing remained but to change our methods of handling the clay. We knew that our clay contained a great deal of organic matter, and our first conclusion in regard to the cause of this phenomenon was that our rapid firing produced gases within the bricks from this organic matter and that the escaping gases caused the spongy centers and the bulged appearance of the bricks. But we soon discarded this theory because only bricks that had been burned to the vitrifying point showed the swelled core, whereas the gases from the organic matter would have been driven off at a much earlier stage of the burn. So we were at a complete loss in regard to the scientific status of the case, but we determined to find a remedy.

In burning the clay that gave us no trouble from swelled cores, our method of procedure had been to watersmoke carefully, but after that was well done, we raised heat as rapidly as possible.

But this method of firing in the other clay bank caused many bricks to have swelled centers.

As stated above, only the vitrified bricks were thus bulged, but bricks burned to a red showed a black center, and salmon bricks, a red center. Drain tile never showed any sign of bulging, but the center of the shell always showed darker than the outside. This seemed to us a very curious phenomenon,—that the inside of a thick piece of clay should seem to be much harder burned than the outside. In fact, often the inside would show signs of fusing, while the outside was just well vitrified.

We had considerable demand for black brick, but the loss from this trouble was so great that we were losing most of our profits. We could remedy the trouble by burning simply to the red color, but that did not fill our demand for black bricks.

We were then burning altogether with wood, and a burner er can raise heat very rapidly with good, dry wood, and for the sake of economy of fuel, we always rushed the fires to the finishing heat. But we noticed that when the wood was wet and green, and the raising of heat was thus made slower, we seldom had any show of this trouble. This gave us an idea, and we changed our plan of firing in the first stages of raising heat. We fired comparatively slow until all the bricks were raised to a dull red heat, and then rushed the fires to a finish, and our trouble of swelled bricks had disappeared. We were still in doubt as to the scientific principles that underlie these phenomena, but our remedy was all right.

A few years later, Prof. Orton published in The Clay-Worker a scientific explanation of the causes of this trouble, and gave practically the same remedy as we have given above.

(To be Continued.) L. C. Moore.

TRYING TO COVER TOO MUCH TERRITORY.

"What do I think of concrete in structural work by this time," said the Colonel, repeating the question that had been asked him preliminary to making comment. "Well, I'll tell you. It reminds me of a political story which you may have heard heretofore, but it fits the case so well that I am going to risk telling it to you again. There was a certain political worker of small caliber and extensive imagination, especially when under the influence of stimulants, who by virtue of a little prowess and a lot of mutual assent and local approbation became recognized as quite a power in his precinct. One night during the political campaign, while he was taking on stimulants and talking politics along with a lot of admiring cronies in a bar room, he worked himself into a state of progressive boastfulness which finally ended in his undoing. He started in by asserting that he was the best blankety blank man in the precinct. On the strength of this assertion his cronies patted him on the back, he ordered another round of drinks and then declared himself the best man in the ward. This was followed by more drinks and more cheering and encouragement until he declared himself the best man in the city. This went all right, too, especially as it was washed down with a round of drinks at his expense, but by this time he had become rather maudlin and reckless in his boastfulness and ripping out a string of oaths he vowed he was the best man in the whole State and dared anybody to deny it, at which a long lank fellow who had been drinking plenty but not saying much, hauled off and batted him one between the eyes which landed him on the floor under the

The Heights Casino Montague St., Brooklyn, N. Y.

table. By and by he crawled out, and being somewhat subdued in manner and considerably sobered, remarked that he was just as good a man as he ever was, but he had undertaken to cover too much territory.

"That's what I think about concrete, it is a good thing in its own precinct but it 's trying to cover too much territory."

Written for The Clay-Worker.

THE ECONOMICAL GENERATION AND USE OF STEAM ON BRICK YARDS.

Second Paper.

THE STEAM BOILER.—The term steam boiler as used in the mechanical arts refers to a closed metal vessel in which water is heated by the combustion, or oxidation, of fuel and converted into an elastic, invisible gas called steam. This gas, or steam is kept in confinement and heat applied until the required degree of energy, or pressure is obtained, when it is permitted to flow—always under control except when its bonds are ignorantly, or carelessly allowed to become too weak to restrain it—into a device termed the steam engine, when a portion of its energy (thermal energy) is converted into mechanical motion. The steam is then permitted to escape to the atmosphere (as in the noncondensing engine) or is exhausted (as in the condensing engine) into a cooling vessel (condenser) where it is condensed by coming into contact with cooling surfaces, or by mixing with a jet of cold water.

Such a process of power development is, however, laboriously, indirect and extremely wasteful. The total available mechanical energy delivered by the flywheel of the steam engine does not, under the best conditions, exceed 18 per cent. of the heat energy evolved by the combustion of the fuel. Notwithstanding this low percentage of efficiency it seems that we have practically reached the limit of our attainment in the transformation of energy by this method; and if the cost of power production is to be diminished or, indeed, kept from increasing, we must acquire other and more direct modes of utilizing the heat energy with which nature is so lavishly provided and man so scantily.

Before taking up the practical side of fuel economy and steam boiler operation it is desirable to know something of the nature of heat and the part it plays in the generation of steam. Ever since in that faraway time, at the world's dawn, when our nowadays famous, simial ancestors were yet unacquainted with any methods of starting fires, and were fain, when the chance afforded, to do their crude cookery and to warm themselves over the dying embers of forest conflagrations or the glowing cinders of molten lava beds, mankind has striven with infinite patience to solve the enigma of heat nature. Years, centuries and milleniums have, however, passed away and still no mortal man may read the riddle nor probably ever can. "Thus far shalt thou go, and no farther" has been decreed to the human race by that wise God who rules all the vast, illimitable space; and so, today and tomorrow, man must struggle on, with this great handicap weighing heavily upon him, until that day comes wherein the heavens and the earth "shall be rolled up like a scroll," and all things stand revealed to mortal and immortal alike.

The physical investigators of to-day, however, who are striving diligently to overcome man's limitations and are peering with eager but swiftly fading eyes into the dark mists that hang over the unknown and the unknowable are agreed that heat is a kind of molecular motion and one of the various forms of energy and that it is capable of being transformed into other forms of energy.

The scope of this article will not permit our entering into a discussion of the different hypotheses of heat, but we will set down such of the commonly accepted theory as will tend to make clear what we have to say in the following in regard to steam generation.

According to the modern view all material bodies consist of an aggregation of exceedingly small spherical particles called molecules which are nowhere in absolute contact but are separated from one another by inconceivably small spaces. These distances, or spaces, small as they are, are yet supposed to be quite large in comparison with the diameter of the molecules; so that the molecules may move about with considerable freedom, but are kept from getting beyond a certain distance apart by the attractive force between them. This force of attraction is termed, in physics, cohesion. and plays a very important part in the economy of nature; for, without it, every material substance in the universe would crumble down into invisible dust.

In accordance with the kinetic theory it is claimed that each molecule is in motion in its little space, vibrating back and forth between its neighbors on all sides and rebounding from them. The body as a whole may not move but its molecules are in constant motion, and if the body be heated, we shall cause its molecules to vibrate faster and to hit harder blows against their neighbors, which usually causes the molecules to move farther apart, thus increasing the size of the body. Hence, bodies are said to expand when heated.

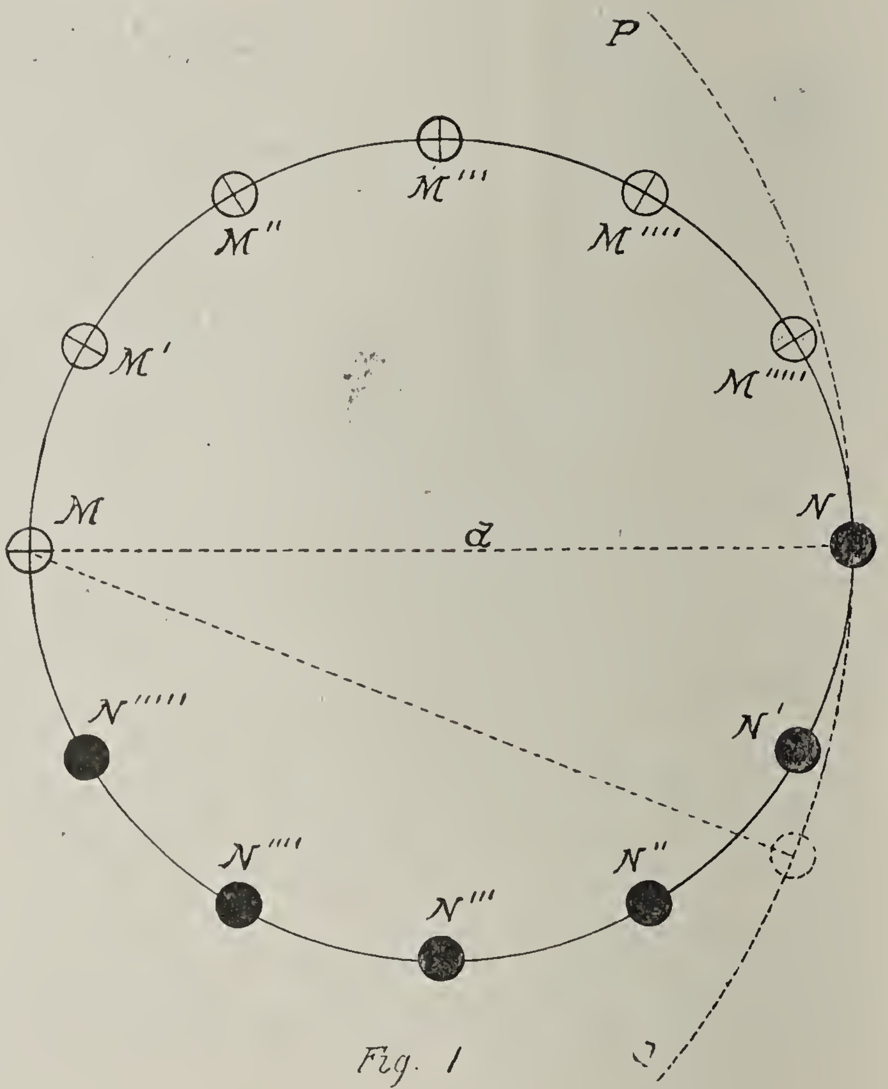


Fig. 1

As may be supposed the motion of the molecules is somewhat different for each of three states of matter—solid, liquid, and gaseous. In a solid the molecules may vibrate about positions of equilibrium, but they cannot move from one point to another in the body. We may, therefore, regard a solid as a stable configuration of particles, whose molecules are in constant though rapid vibration. In a liquid the molecules have sufficient freedom of motion to slip between and around one another so that they are able to move from one place to another in the body of the liquid with comparitive ease . They are still, however, so close together that their motion is greatly modified by their collisions with one another and the force of attraction between them. In a vapor or gas the molecules are so far apart and their velocity so great that their attractive force no longer exerts any modifying influence on their motion, and they move freely in the intervals of time between collisions with one another and with the walls of the containing vessel, when, in consequence of their elasticity they rebound at once and start on a new path. The result of this immunity of its molecules from the restraining influence of cohesion is, that a gas tends to expand indefinitely unless confined in a gas-tight vessel.

A clever illustration of the character of the motion existing among molecules was given by Mr. F. R. Low in a lecture on Steam which appeared in Power a few years ago. As he states, this representation may not stand the test of rigid analyses, but it will yet serve as something tangible upon which to fasten our ideas of molecular motion.

In substance it was about as follows: Let M and N, Fig. 1, be two molecules of a solid, free to revolve about each other at a distance d apart. If M remained at rest and N revolved about it, N would follow the path shown by the dotted arc P. N. Q. The indications, however, are that all of the molecules of a body are in constant motion, and we have no reason to suppose that M remains at rest. It would be more reasonable to assume that M revolves about N in the same time that N revolves about M. They would, therefore, transverse a common path, or circular orbit, M, M', M'' —— N, N,' N,'' whose diameter is d, the distance between the centers of the molecules, their mutual attraction preventing their getting beyond this distance apart. For, while M was moving to M,' N would pass to N,'' and when M reached M,'' N would get to N'''; and so on for each of the successive positions.

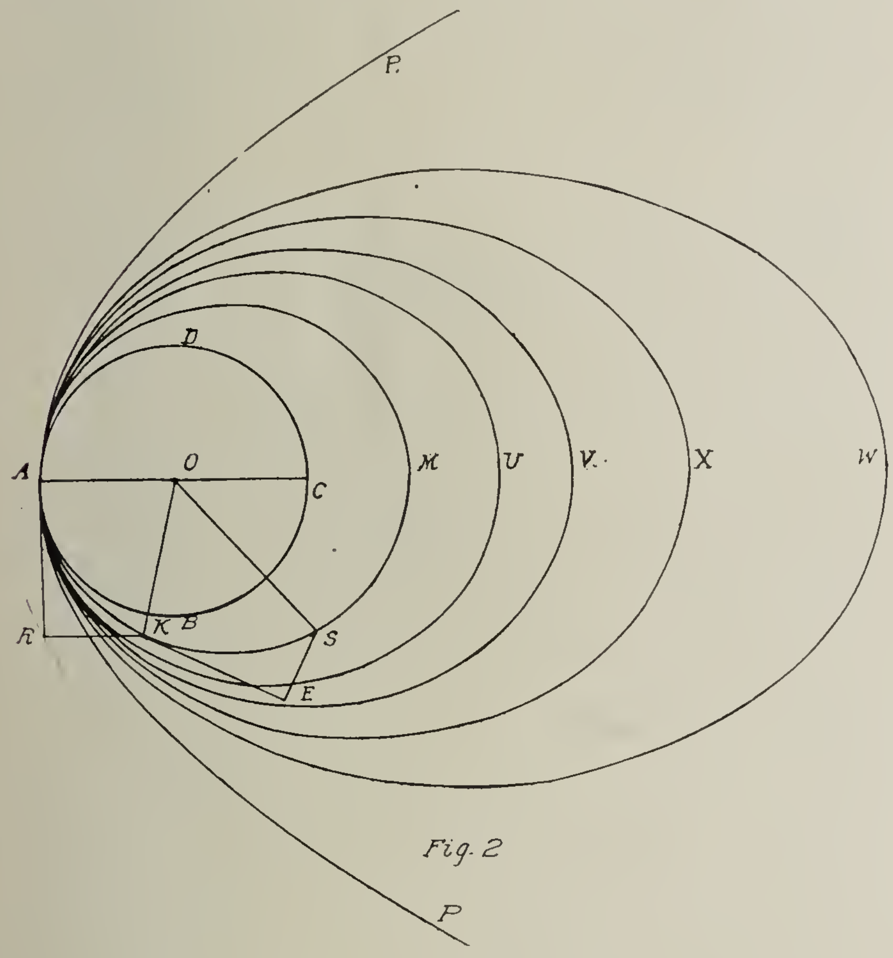
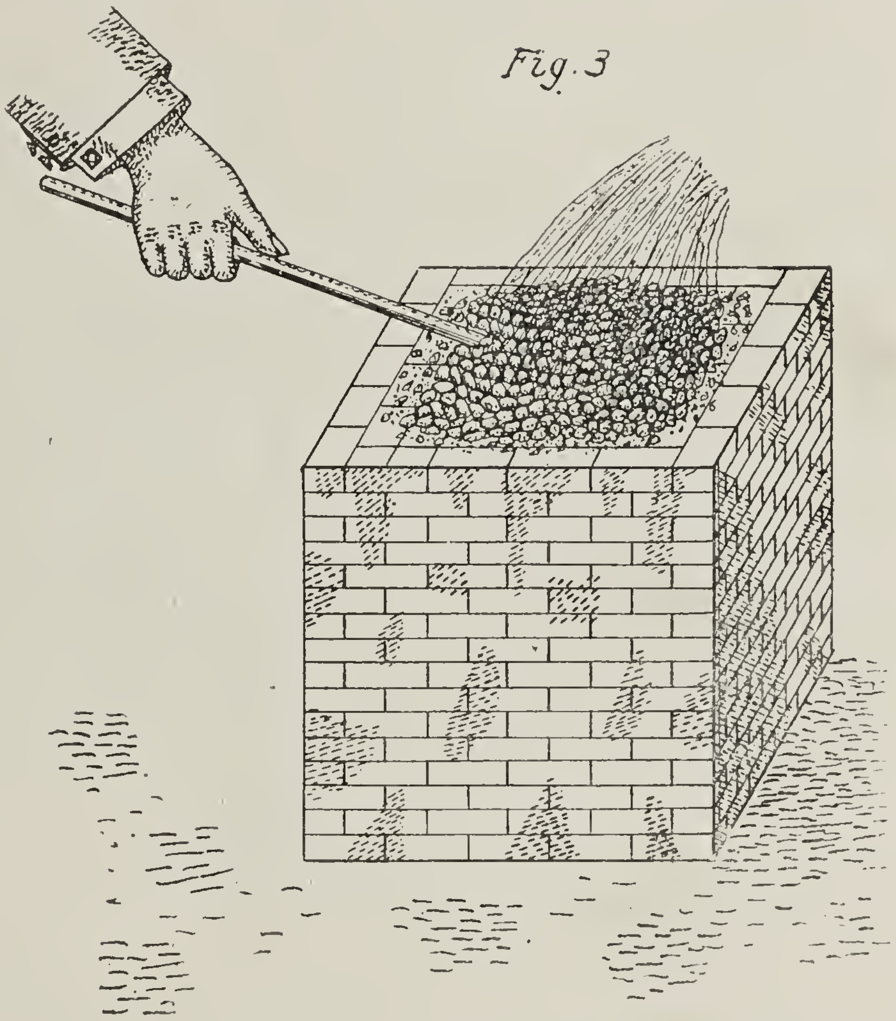


Fig. 2

Now, according to the laws of motion, if a body were revolving in a circle about a center of motion as the molecules M and N are supposed to be, and its velocity were accelerated the centrifugal force; that is, the force tending to pull it away from the center, would also increase, and the body would recede to a greater distance from the center of motion. This increase in the distance from the center of attraction would lessen the force of attraction and the two forces—centrifugal and attractive—being now unbalanced, the attraction force would no longer be able to hold the revolving molecule to its circular path. Its influence, however, would still be exerted to a sufficient extent to largely modify the path over which the molecule would move. To illustrate the action: Suppose we have a body or molecule moving in the circular path A B C D, in Fig. 2; when it arrives at A let it receive an acceleration of motion, which increases its centrifugal force. At this point it tends to fly off in a tangent AR to its circular path, but the attractive force still exercises a part of its former influence and draws the molecule in to K. Here again the body would continue moving in a straight line KE tangent to the curved path, but the attractive force compels it to move to S. This influence is continued throughout the entire cycle of motion, and the molecule is constrained to move in an elliptical path A K E S M. As the velocity of the body increases, its orbit widens and widens as shown by the ellipses U, V, W and X, until it finally becomes parabolic in form and the body passes beyond the influence of the center of attraction O.

The velocity of molecules is difficult to determine with any degree of accuracy since their orbits of vibration are so very small and the rapidity of their motion so very great, Maxwell, a celebrated English physicist, estimated that hydrogen molecules at freezing temperature, 32 degrees Fahrenheit, and under a pressure of one atmosphere (14.7 pounds per square inch) had an average velocity of 6100 feet per second; traveled a mean distance of 38 ten millionths of an inch without collision; and collided with other molecules about 17,750 million times per second.

Fig. 3



Scientists have also recently determined that the particles flying off from radium atoms in the first of the series of transformations which resolve radium into other substances have a velocity of about 620 miles per second; and as this bewildering flight was not sufficiently rapid, it is increased to approximately 730 miles per second in the third of the aforesaid series of transformations. The possession of such enormous velocities enables radium atoms to wreck any gaseous molecules with which they may chance to collide, and give them the power to penetrate through solids to a certain extent, as it should by the ordinary X-ray phenomena.

The foregoing statements have been made with a view of rendering familiar the idea of there being a constant motion of the particles which make up material bodies, and to indicate the probable identity of heat and molecular motion. To be sure these suppositions seem, at first thought, little more than extravagant guesses, but when we reflect that phenomena occur just as if they were true, then we must be content to adopt them until better hypotheses are produced.

We may now pass to a consideration of the manner in which heat energy is transmitted through matter and space. It we place a hot body in a cold room and leave it several hours, we shall find that its temperature (average kinetic energy of the individual molecules) has diminished until it has the same, or very nearly the same, temperature as the other objects in the room. From this it is easy to infer that there is a tendency everywhere to equalization of temperature; or, stating it in other words, heat tends to flow from a hot to a cold body, until there is an equilibrium of temperature. All experience confirms the truth of this inference, and we may therefore, regard it as an assured fact.

The economical generation of steam requires that both the designer and the operator of a steam boiler shall understand and comply with the laws that govern the transmission of heat from one point to another, through matter and space, and we will, therefore, consider briefly the three methods of heat transmission, conduction, convection, and radiation.

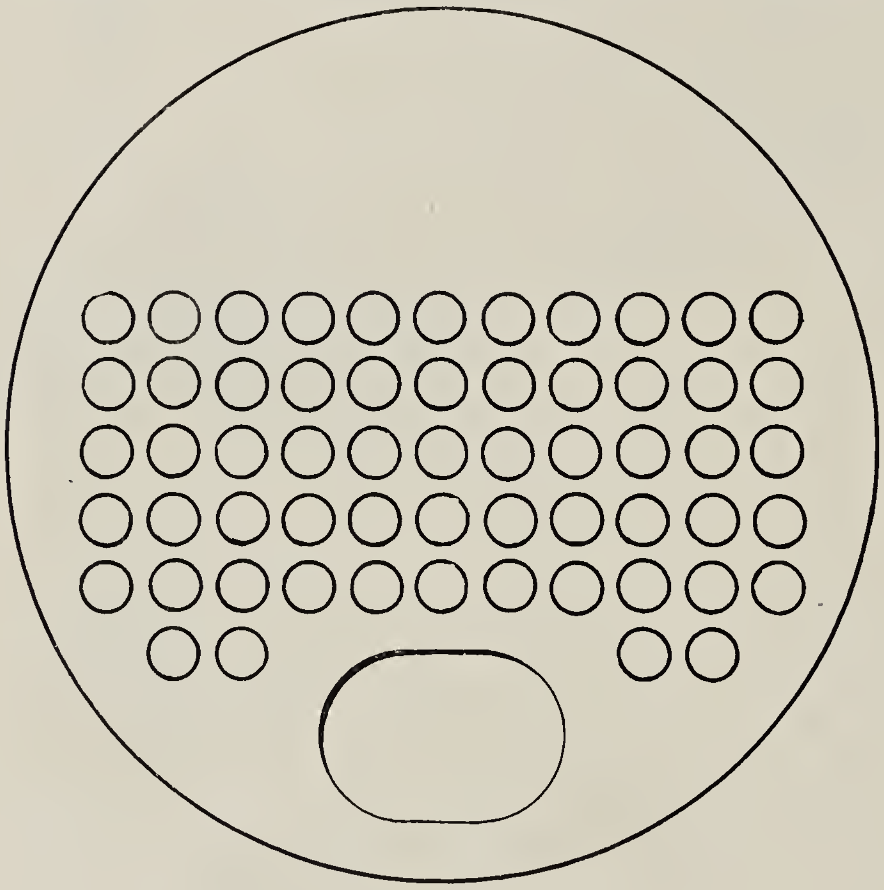


Fig. 4

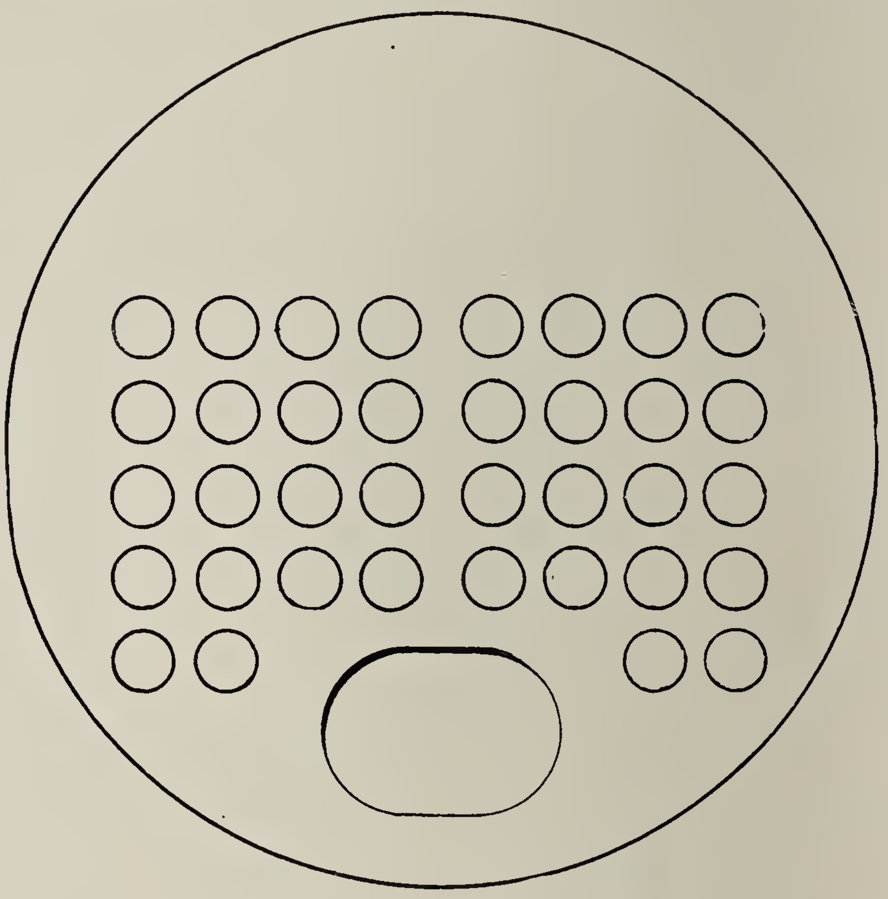


Fig. 5

If we place one end of an iron bar in the fire, as shown in Fig. 3, and hold the other end in our hand, we shall find that the end we are holding gradually increases in temperature. By sliding our hand along the rod nearer and nearer to the fire, we will find that the rod is hotter, the nearer our hand approaches the fire. The molecules of that portion of the rod in the flame have their motion accelerated; they strike harder blows against their neighbors, increasing the velocity of the latter; these in turn quicken the motion of the next and so on down the entire length of the rod until the end held by our hand has the velocity of its molecules increased, and imparting to the touch, the sensation of higher temperature. This method of heat transference from places of higher to places of lower temperature in an unequally heated body is termed conduction and the body through which the heat is transmitted is termed a heat conductor. It will be noted that the end of the rod in the flame in the foregoing illustration has a much higher temperature than the other end. This is due to the fact that the vibration of the molecules gradually diminish in intensity from the fire, outwards.

By holding rods of different materials in the fire it will be readily noted that there occurs considerable variation in the length of time elapsing before the sensation of heat is felt. From this it is easy to deduce that some substances conduct heat much more rapidly than others. Those which conduct heat best are termed good heat conductors, while the other substances are termed poor conductors. By proper experiments, it may be ascertained that all metals are good heat conductors, although they differ widely among themselves. Most other solid substances are not such good conductors as metals. Of the liquids, mercury is the only good conductor. Gases are all very poor conductors. It is difficult to discover that dry, pure air, and some other gases possess any conducting power.

The following list will give an idea of the conducting power of some of the metals, as compared with silver, which is rated at 100:

Silver	100	Tin	14
Copper	73	Iron	12
Gold	53	Steel	11
Brass	23	Lead	8
Zinc	19		

From this list it is easy to understand the reason why copper was for so many years a favorite metal in the construction of steam boilers. Its capacity for transmitting heat is more than six times as great as that of iron, but its tensile strength is far less, so that the high steam pressure of the past few years have for the most part driven it out of the steam field. Its relatively high cost is also a huge factor tending to prevent its utilization to any large extent in the construction of steam apparatus.

In the process of convection, some portion of the body whose temperature is raised moves away to other places in the body where the temperature is lower. We have seen that portions of solids cannot change their relative positions in the body of the solid, consequently, convection can take place only in liquids and gases. A practical example of this method of heat conveyance is shown by setting a vessel of cold water over the fire. Portions of the water next the bottom become heated and expand, thereby becoming less dense than the water above and so tend to move upwards to the top of the water. At the same time, the cooler water at the sides of the vessel descends to take the place of that which rises. This action of the water sets up a system of circulation which is of particular importance in a boiler, since heat is conveyed in this manner to the water farthest removed from the fire which would otherwise have a considerably lower temperature than that nearest the fire on account of the low conductivity of water.

For this reason, the system of spacing boiler flues as shown in Fig. 4 has been abandoned in the best designed boilers for the method shown in Fig. 5. The chief difference between them is the wider space between the two vertical rows of the latter. This design has been found theoretically and practically, to afford less impedance to the convection currents in the water, thereby making the boiler a better steamer.

The removal of the vaporization from drying sheds, the distribution of heat in kilns, and in fact all operations on brick yards requiring the application of heat, are dependent for the most part on the agency of convection for their successful conduct. Theo. Rizer.

(To be Continued.)

Written for The Clay-Worker.

THE ECONOMY OF PRODUCER GAS FOR BURNING CLAYWARE.

AS EARLY as 1892, the writer experimented with producer gas used in connection with pre-heated air in a direct fired kiln. The gas was made in an old-fashioned round iron tank producer, such as was used in steel plants at that time. The gas was led some 90 feet through an under-ground brick flue to the kiln where it rose through a chamber whose walls were the inside walls of the recuperators. The products of combustion were led downward through these recuperators, which were composed of a series of air ducts exposed to the heat given off by the products of combustion on their way to the chimney; thus raising the temperature of the air before it reached the flame. Due to the location of the gas passage between the two recuperators, the gas also absorbed some of the heat. But as the kiln was cold and damp at the start from the freshly set material, and as all of the heat that came over with the gas from the producer was taken from it during its passage through the long flue, great difficulty was always experienced in lighting the gas at the start. Of course after the kiln had been warmed up, a small amount of pre-heated air of low temperature began to be formed. When this point was reached, the gas would stay lighted. In order to light the kiln, we almost always had to resort to a wood fire placed at a point just above gas jets. When sufficiently warm, the gas would light, but not before.

The efficiency of this kiln was not at all good, as it had to be cooled off every ten days and started up again, going through the same troublesome and annoying labor to get the gas relighted. As the pre-heated air could only come from the hot recuperators, we got no benefit from this source until the kiln was completely water smoked. After this the products of combustion were turned into the stack, heating the recuperators, thus the functions of the process were delayed until more than one-half of the fuel had been used.

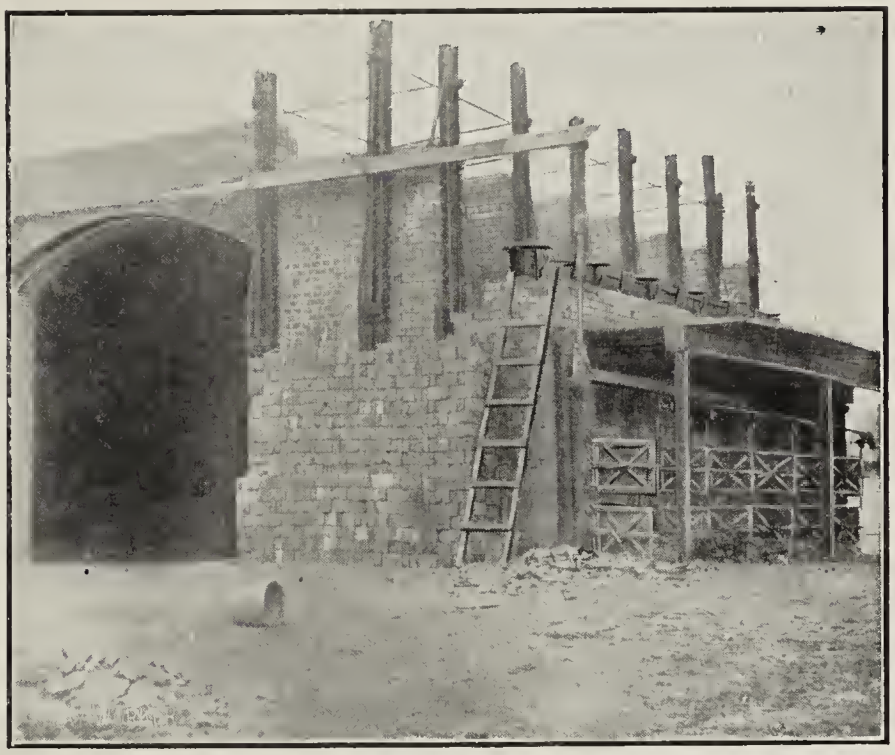
Further, as the economy of the fuel consumption depended mainly on the pre-heated air used for combustion, the maximum temperature of this pre-heating was never reached until the kiln was about done.

I will state here that carbon monoxide ignites at about 1200 degrees.

For the reasons above given, I do not favor a direct fired kiln with the gas producer placed so far from it that the gases have an opportunity of cooling. The gas should come to the kiln hot enough to ignite itself and not depend upon warm air.

In 1902, as an experiment, we built a four-chamber continuous gas producer kiln, with gas lead of 40 ft. In using these kilns, trouble in a minor degree is experienced from cooling, causing more or less sooting. However, we show a large saving of fuel after the first chamber has been burnt, as all the flues are warm and as the air from the cooling kiln is used to burn the gas in the kiln under fire and the products of combustion are forced through the kiln ahead to warm it up.

I do not favor the placing of the producer even at 40 ft., as there is no reason why the by-products carried over in the gas should not add their quota of heat to the total, and frequently a large part of the carbon monoxide may be burnt in the producer itself. If the producer is directly against the kiln, no loss of heat could result.



View of Kiln No. 18; Parker-Russell Mining and Manufacturing Company, Built in 1904, as a Free-Fire Gas Producer Kiln With Producers Directly Against It, Arranged for Cold, or Pre-Heated Air From Kiln Near It.

Because steel furnace men find it necessary to cool their gases, in order to get rid of the by-product which would be harmful to the metal, is no reason for the same practice in a brick yard, where economy of fuel only and not purity of gas is desired. The loss of heat is large where the extraction of by-product, which might be burnt, is necessary, also the heat generated in making gas in the producer is very considerable; why should this be thrown away. The gas as it leaves the producer is at 1100 degrees Far.; why should it be cooled to 104 degrees before use.

In cases where muffles are required, some experiments should be made as to the effect of crude producer gas on glazed and unglazed clay wares, possibly some sort of purification might be necessary.

The writer is now using a gas producer kiln, with the producers built directly against it. See cut showing one side of kiln with 6 sealed hoppers and 12 doors. He has used this kiln as a direct fired kiln and found it to be very satisfactory because he feeds the fuel through a sealed hopper and the gas is hot. This kiln is very flexible as to oxidizing and reducing conditions, as a large quantity of air may be admitted in the kiln at the point where the gas enters, or it may be checked down to a very small amount. Again, the sealed doors above and below the grates may be opened. This kiln is built so it can receive pre-heated air from a cooling kiln near by. When this hot air is used, it might be called a free-fired gas producer kiln with pre-heated air.

Tests are being made with this kiln, burning with cold and with hot air. The saving is very small when burnt with cold air, when burnt with hot air the saving is considerable, probably one-half of the fuel.

The real and only place for the gas producer in connection with a brick kiln is against it, along with a continuous arrangement.

There is no question that a properly designed gas producer continuous kiln will save one-half of the fuel.

This article was called forth by the excellent paper read before the Ceramic and Brick Manufacturers Association, by Mr. Wyer, and I believe every brickmaker should make a study of the subject.

Mr. Chapman's discussion was very interesting, but I believe that some of the positions he took were rather optimistic.

TABLE No. 1.

Bushels of coal burnt in kilns, per ton of material. Coal from several different mines in Illinois. Table shows results of burns in regular rectangular free-fire down-draft kilns, old style.

Mine No.	Kiln No.	Bu. Coal Used to Burn Kiln.	Tons Material Burnt.	Bu. to Ton.	Lbs. Ashes Hauled Away
1	8	340	44	7.74	4130
1	9	389	46	8.45	4150
2	7	431	48	9.00	6450
3	9	396	50	7.90	6240
4	5	412	50	8.24	5020
5	7	396	48	8.25	6400
5	8	373	57	6.55	5520
5	9	395	57	7.00	5190
6	10	346	48	7.20	5380
6	1	484	65	7.44	6080
6	7	392	58	6.75	4770
7	4	279	40	6.97	
7	10	347	43	8.07	
7	5	356	35	10.17	
7	8	418	45	9.28	
Total		5754	734=Av. 7.84-100 bus. per ton.		

TABLE No. 2

Result of burns of 4-chamber gas producers, continuous kilns, April 16 to May 11, 1903.

Kiln No.	Date Started	Date Finish'd	Hrs. under waste heat	Hours under gas	No. of brick	No. of Tons	No. bushels	No. bushels per ton	Held hot on next kiln Hrs.	Bushels of Coal
21	Apr. 16 9 a. m.	Apr. 25 12 m.		219	18,140	63.49	662	10.43	All flues and kilns cold on start	
22	Apr. 25 12 m.	Apr. 28 3 p. m.	82	75	18,600	65.10	253	3.88		
23	Apr. 28 3 p. m.	May 1 12 m.	24	81	18,140	63.49	277	4.37	May 1 12 m.— 28 to May 2 4 p. m.	44.88
24	May 2 4 p. m.	May 5 11 p. m.	16	79	18,020	63.07	253	4.02	May 5 11 p. m. to May 6—11½ 10:30 a. m.	31.68
21	May 6 10:30 a. m.	May 11 8 a m.	79	117½	18,042	63.15	340	5.39		
Bushels used on delayed kilns					......	......	77	......	Total bushels used holding kilns hot for next kiln to be set 76.56	
					90,942	318.30	1862	......		
Average on total coal used against total tons					5.85					
Less kiln 21						63.49	662			
Average without kiln No. 21 first burn						254.81	1200	4.71		
Less coal holding kilns hot						......	77			
Average without coal used to hold kiln hot						254.81	1123	4.41		

REMARKS ON THE BURN OF CONTINUOUS KILNS BURNED APRIL 16 TO MAY 11, 1903.

The above figures were made on a basis of 2.64 bushels of coal to a hopper.

Kiln No. 21 on first burn started from cold, was very wet and flues leading to stack damp,

Kiln No. 22, only trouble lack of gas at right times and loss of heat in cleaning out; had 82 hours of waste heat from kiln No. 21.

Kiln No. 23 was choked up with soot on start of heat with waste gases; only had 24 hours under waste heat from kiln No. 22.

Kiln No. 24, trouble in starting; only 16 hours of waste heat from kiln No. 23, due to trouble in No. 23.

Kiln No. 21, second burn; had 79 hours waste heat from kiln No. 24, but lost advantage in leakage of gas into No. 22 and sooting up, and a gradual filling of main pipe with soot.

TABLE No. 3

Result of burns of 4-chamber gas producer, continuous kilns, March 14th to May 11, 1904.

Kiln No.	Date Started	Date Finished	Hrs. under gas	No. tons burnt	No. bus.	No. bus. per ton burnt
21	Used as checker work, record not taken					
22	Mar. 14, 5 p. m.	Mar. 16, 4 p. m.	47	65	206	3.17
23	Mar. 16, 6 p. m.	Mar. 18, 3 p. m.	45	70	210	3
24	Mar. 18, 5 p. m.	Mar. 20, 6 p. m.	49	65	211	3.24
24	Used as checker work, record not taken					
24	Apr. 14	Apr. 16	48	68	275	4.4
21	Apr. 16. 12 m.	Apr.18, 4:30 a.m.	64½	70	252	3.6
22	Apr. 18, 11 a. m.	Apr. 21, 11 a. m.	72	70	266	3.8
23	Apr. 21, 11 a. m.	Apr. 23	48	69	243	3.52
24	Apr. 23, 11 a. m.	Apr. 26, 9 a. m.	70	66	274	4.3
21	Apr. 26, 9 a. m.	Apr. 28, 9 a. m.	48	67	220	3.28
22	Apr. 28, 12 m.	Apr. 30, 10 a. m.	46	70	279	3.98
23	Apr. 30, 3 p. m.	May 2, 11 p. m.	56	67	278	4.15
24	May 3, 1 a. m.	May 5, 8 a. m.	55	68	234	3.44
21	May 5, 10 p. m.	May 7, 9 a. m.	34	68	216	6.35
22	May 7, 2 p. m.	May 9, 4 p. m.	50	69	268	5.36
23	May 9, 5 p. m.	May 11, 1 p. m.	44	73	222	5.4
Total				1025	3654	

Average $3\frac{57}{100}$ bushels, without counting first kiln starting cold.

May 11 repairs necessary. No. 23 not emptied, was closed up to retain heat to be used in starting again. (See table No. 4).

TABLE No. 4

Result of burns of 4-chamber gas producer, continuous kilns, May 19 to August 6, 1904.

Kiln No.	Date Started	Date Finished	Hrs. under gas	No. tons burnt	No. bus.	No. bus. per ton burnt
	Starting moderatly warm					
24	May 19, 1 p. m.	May 23, 4 p. m.	95	68	548	8 29
21	May 23, 6 p. m.	May 25, 9 p. m.	51	70	294	4.2
22	May 25, 6 p. m.	May 28, 4 p. m.	70	68	386	5.67
23	May 28, 5 p. m.	May 30, 11 a. m.	42	60	197	3.28
24	May 30, 7 p. m.	June 2, 5 p. m.	70	66	316	4.77
21	June 2, 6 p. m.	June 6, 5 p. m.	95	64	424	6.62
22	June 6, 5 p. m.	June 9, 7:30 a.m.	62½	63	343	5.44
23	June 9, 9 a. m.	June 11, 11 p. m.	62	60	310	5.16
24	July 19, 6 p. m.	Drying off kiln	Starting cold record not taken			
21	July 22, 6 a. m.	July 26, 8 p. m.	110	69	475	6.88
21	July 26, 11 a. m.	July 28, 9 p. m.	70	61	359	5.88
22	July 28, 11 p. m.	Aug. 1, 2:30 p. m.	87½	61	445	7.29
23	Aug. 1, 4:30 p.m.	Aug. 4, 9 a. m.	72½	63	286	4.54
24	Aug. 4, 10 a. m.	Aug. 6, 9 p. m.	58	64	264	4.12
Total				837	4647	
Less first kiln				68	548	
Average No. bu. per ton burnt 5.55				769	4099	

Average number bushels per ton burnt without first kiln 5.33.

Kiln No. 24 started warm from kiln No. 23, allowed to stand without emptying from May 11 to May 24 (see table).

No. 3 resulted in use only $8\frac{29}{100}$ bushels in starting this burn.

TABLE No. 5

Result of burns of 4-chamber gas producer, continuous kilns, Sept. 30 to Oct. 22, 1904.

Kiln No.	Started Kiln	Stopped Kiln	Hrs. under gas	No. tons burnt	No. bus.	No. bus. per ton burnt
	Starting cold					
22	Sept. 30, 5 p. m.	Oct. 8, 7:30 a. m.	182½	64	860	13.4
23	Oct. 8, 9:30 a. m.	Oct. 10, 7:30 a. m.	46	61	307	5
24	Oct. 10, 9:30 a. m.	Oct. 12, 6 p. m.	56½	70	345	4.9
21	Oct. 13, 9 a. m.	Oct. 15, 1 p. m.	52	70	358	5.1
22	Oct. 15, 2:30 p.m.	Oct. 17, 1 p. m.	47½	68	293	4
23	Oct. 17, 2 p. m.	Oct. 19, 3:30 p.m.	49½	69	276	4
24	Oct. 19, 4:30 p. m.	Oct. 22, 11:30 a.m.	67	67	298	4.4
Total				469	2737	
Average No. bu. per ton burnt 5.8, less 1st kiln				64	860	
				405	1877	

Average number of bushels per ton burnt without first kiln 4.64.

1904. Two producers.

NOTE—A wide variation of time for kilns under gas will be noticed in tables 2 to 5 inclusive, from 34 to 110 hours—these extremes without a corresponding proportionate increase of bushels per ton in some instances.

This variation of time under gas is due to holding kilns hot after they are finished burning, in order to take advantage of the waste heat for the kiln ahead which had not been emptied and set soon enough, only four chambers being used instead of eight, as is really necessary for every day use.

In table No. 2 two examples of this holding of kilns hot is given. (See kilns Nos. 23 and 24).

TABLE No. 6

Kiln No. 18. (Gas producers built against kiln. Not continuous).

Air of Combustion	Bushels Used	Tons of Material Burnt	Bushels to Ton	Per Cent. of Ashes Hauled Away
Cold	1064	149.42	7.00	14
Cold	1053	151.87	6.75	13
Cold	1203	157.48	7.62	14½
Cold	901	149.50	6.00	Record Lost
Total....	4221	611.27		

Average for four kilns $6\frac{9}{10}$ bushels.

This kiln built so gas may be burnt with or without pre-heated air. In either case, however, air does not pass over the fuel, but is admitted on the kiln side of flash walls.

Above, I give some tables showing tests.

Table No. 1 shows bushels of coal used per ton of material burnt in ordinary free fired down draft kilns, giving a very wide range of results due to varying quality of Illinois coal.

Table No. 2 to 5 inclusive shows bushels per ton used in the four chamber gas producer kiln. Note the first kiln used when starting shows much worse than the poorest showing in Table No. 1. The conditions under which this kiln starts are similar to that of a free fired gas producer kiln with producer at such distance that gas leaving producer at 1100° Far. is practically cold before reaching gas jet. Also note average of several rounds are given, showing coal used per ton with and without this first kiln, also some of the data obtained shows fuel lost while holding kiln hot in order to set and empty a kiln ahead of the water smoking kiln. Should we connect four additional kilns to this series, this holding kilns hot for setting would be eliminated.

Table No. 6 shows an incomplete record of free-fired gas producer kiln, with producer built against it, insuring hot gas with cold air of combustion only. The pre-heated air item for brick is not yet available.

SUMMARY

Average of table, one with ordinary down draft free-fired kiln, old style 7.84 bushels per ton; count this 8 bushels per ton.

Average of starting first kiln of continuous system from cold:

Table 2, kiln 21— 63.49 tons burnt with 662 bu.
Table 5, kiln 22— 64.00 tons burnt with 860 bu.
127.49 1522

Equal average of $11\frac{93}{100}$ bushels per ton; call this 12 bushels per ton. As the kilns were cold and the lead of gas 40', this table might be taken as an indication of bushels per ton necessary to burn a free-fired gas producer kiln with a long lead of gas pipe cooling the gas and not using pre-heated air.

Average of Table 6 shows result of 4 burns of a free-fired gas producer kiln with producers placed directly against it; using hot gas and cold air shows 4221 bushels to burn $611\frac{27}{100}$ tons, $6\frac{9}{10}$ bushels of coal per ton burnt; call this 7 bushels per ton.

Average burns of continuous kilns, see Tables 2, 3, 4 and 5, without considering cold starting kiln.

Total of Table 2, without kiln No. 21, 1200 bu. to burn 255 tons
Total of Table 3, without kiln No. 21 and 24, 3654 bu. to burn 1025 tons
Total of Table 4, without kiln No. 24, 4099 bu. to burn 769 tons
Total of Table 5, without kiln No. 22, 1877 bu. to burn 405 tons
10,830 2454

An average of $4\frac{42}{100}$ bushels per ton burnt. To be on safe side, from this we might consider 4½ bushels per ton as the proper average to burn gas producer continuous kilns built with a 40' lead of gas, and an 18' lead of hot air and four chambers. These long leads contributing to a poor showing, through loss of heat units from opportunity of cooling, showing remarkably good results notwithstanding drawbacks.

Conclusions from Tests.

Ordinary free-fired kilns down drafted, burnt to 2400°, take about 8 bu. to a ton to burn, using Illinois coals as was done in all tests of every kind, shown here.

Free-fired gas producer kilns with a 40-foot lead of gas pipe burnt with cold air are not economical, as it takes more bushels per ton to burn than in an ordinary old style kiln=12 bu. against 8 in the ordinary kilns.

Free-fired gas producer kilns with producers built against kiln and burnt with cold air are slightly more economical than the ordinary kiln; possibly one bu. per ton better, as 7 is to 8 bu. in the ordinary kiln.

Free-fired gas producer kilns, producer against kiln burnt with hot air (tests not made) indications point, however, to considerable economy.

Gas producer continuous kilns with 40 ft. lead of gas and 18 ft. lead of hot air and only four chambers shows 45% saving over ordinary free-fired down-draft kilns, as 4½ is to 8 bu. in ordinary kiln.

Gas producer continuous kilns with producer built against kiln and a very short lead of hot air, not over 7 ft. to 8 ft., between kilns are the best. We may assume positive saving of 50 per cent., possibly as much as 66 per cent. when properly designed and with 8 or more chambers.

The placing of producer convenient to fuel necessitating a long lead of gas from the producer to less convenient location of kiln is not the best thing to do, considering the results shown by above tests. Kilns with producers built against them are the best and should be located so as to have producers as convenient as possible to the coal pile, using the best system of fuel and ash conveyors obtainable.

Trusting the publishing of the results of these tests may help fellow brickmakers in the study of fuel economy in kiln burning, I am, Very truly yours,

Feb. 22, 1906. LEMON PARKER.

Written for THE CLAY-WORKER.

RURAL OPPORTUNITIES.

The continued high prices of yellow pine and other structural lumber is doing much to make opportunities for the brick trade in rural districts, because it has now reached the point where most building contractors concede that it is just about as cheap to erect a building of brick as it is to erect it of lumber. And, from present appearances, and from the tone of yellow pine manufacturers, it looks like this is not merely a spurt on the part of structural lumber, but that we have reached the age of higher values, because of the growing scarcity of the timber supply of the country, and in support of this we have present with us to-day a tendency to even higher market prices on yellow pine lumber. In other words, the mill men contend that lumber will never be any lower, but will gradually increase in value, and this, together with the increased prosperity of the agricultural districts, and the natural tendency to build better structures, is making a mighty good opening for enlarging the use of clay products. Another point worthy of note, too, is in the fact that most of the plans for rural structures were formerly home-made, so to speak, while today they are turning to regular architects for their plans. This furnishes two openings instead of one for the brick manufacturer to do good mission work. That is, he cannot only go direct to the farmer with his arguments in favor of brick and other architectural clay ware, but can also do good work through the architects of the country. The time is ripe, too, for mission work along both lines and it is but natural that the clayworker, who, as we know, has the best building material in the world, should keep in close touch and work harmoniously with the architectural world right along, and there is a special reason for direct efforts toward rural districts right now, because it is in the rural districts that the frame building has been done right along, and at the present time these districts are ripe, or in condition to properly receive the doctrine that the structural material of the future is brick, and that brick must just as naturally succeed lumber in erecting dwellings as lumber has succeeded the old log cabin of pioneer days. Moreover, the coming of brick extensively into the rural building world is practically certain and it is only a matter of time until the rural districts will be seeking clay ware, unless in the meantime clayworkers seek the rural builder. The enterprising manufacturer of clay products, however, should not wait for trade to be forced upon them this way, but should go out and put his shoulder to the wheel and help enlarge the field of clay products. In other words, he should take advantage of the opportunities now offered in the rural districts.

WHY VITRIFIED BRICK PAVEMENTS ARE THE BEST.*

Valid, Self-Evident Reasons for the Choice of Brick Pavements That Appeal to All Taxpayers.

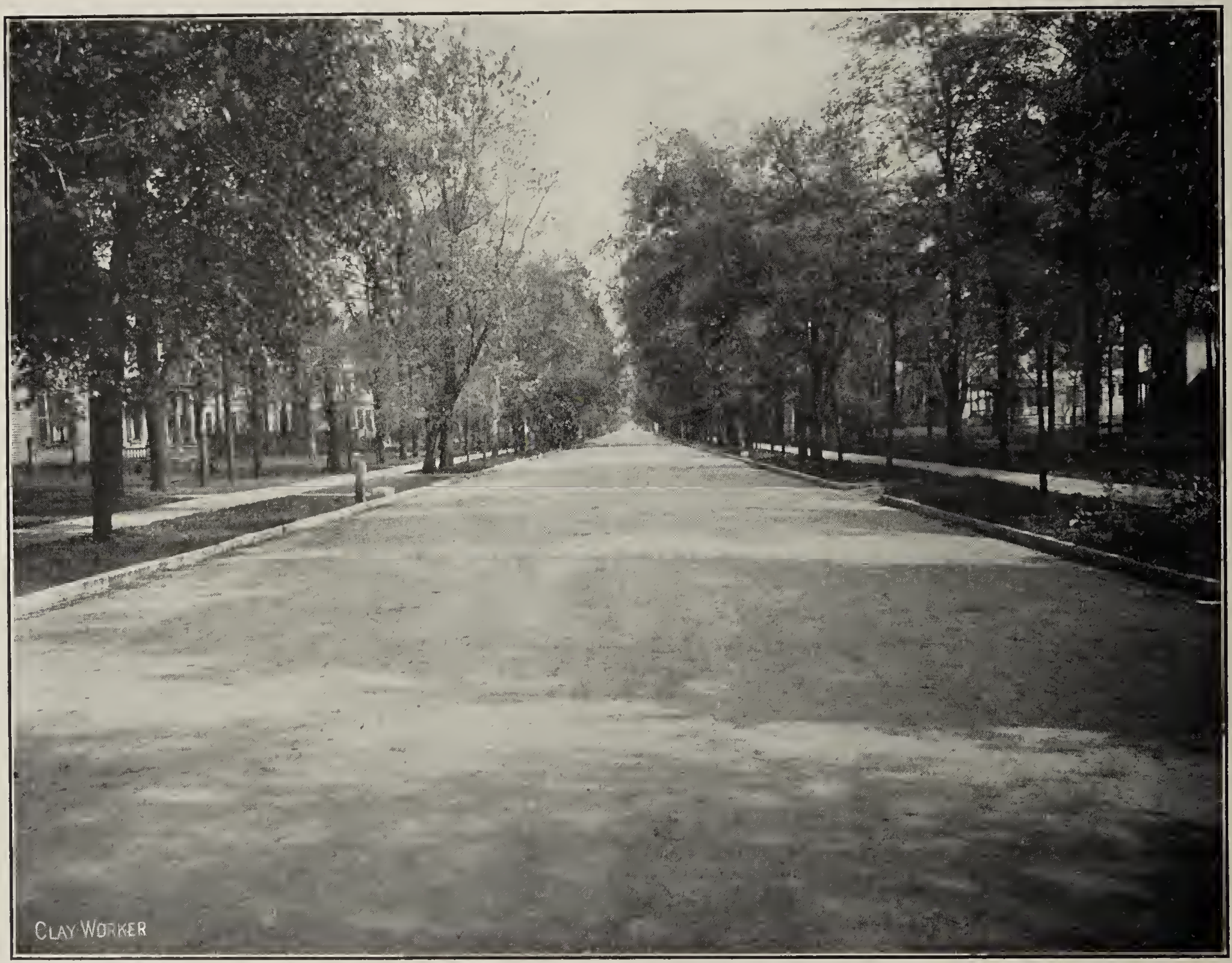
FIRST, because you can make choice of different kinds and methods of construction: according to conditions of use, the nature of the soil in various localities, the local or nearby supply of sand, gravel, and stone—requirements, taste, or price. The most expensive with all details supplied or the least expensive and easiest manner of construction—the wants and needs of the largest cities down to the smallest of our villages. But whether a particular construction be chosen or not, brick streets meet conditions at either extreme—you do not have to legislate against the use for which they were built, nor will they evaporate or rot if not used at all. Equally good for heavy or light loads—wide or narrow tires.

Second, they can always be constructed at reasonable prices. No patent monopoly—no secret process—the market is open, and free competition afforded in every material entering into their construction. Vitrified brick are made by more than one hundred independent firms or corporations throughout the United States and there are more than one thousand contracting firms and corporations engaged in laying them.

The actual first cost is less than that of other pavements, prices ranging anywhere in the United States, with a few exceptions, at from $1.00 to $2.00 per square yard—method of construction, freight rates, cost of gravel, stone, sand, etc., being the factors regulating the exact figures at different places.

Third, the methods of laying brick streets are so simple and easily understood, that any property owner can know from observation whether or not his street is being built as it should be. Whereas in the case of asphalt or bituminous macadam, there is a continued dispute as to which is the best mixture, or which method produces the best result. There is no dispute among the brick manufacturers as to which is the best method of construction, and you can get carefully drawn directions for laying pavements from any one of them. You can know whether you are getting a good brick street while it is being built. With other kinds of street you do not know for a year or more and it is then too late.

Fourth, they are positively the most durable pavement of any in the world and hence the cost of maintaining them is so small that this really presents the greatest reason of all why brick pavements are best. Constructed in the poorest possible manner they are far more durable than the best constructed of other kinds.



South Sixth Street, Terre Haute, Ind., South from Main Street. One Mile in Length. Laid in 1891 With Vitrified Brick. No Repairs. In Fine Condition March 1, 1906.

The following testimony sustains all the foregoing claims: —The City of Buffalo, New York, at the end of the fiscal year, June 30, 1904, according to the report of the Department of Public Works of that city, had pavements as follows:

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*Pamphlet issued by the National Paving Brick Manufacturers' Association, copies of which may be had on request to W. P. Blair, Secretary, Terre Haute, Ind.

Kind.	Miles.	Sq. Yds.
Asphalt on concrete	209.089	3,903,115
Asphalt on stone	16.595	264,505
Asphalt on macadam	0.338	8,026
Stone on sand	87.405	1,840,972
Block stone	9.634	186,029
Brick	12.744	203,915
Macadam	4.669	92,468
Total	340.474	6,499,030

Commencing with the year 1878 up to June 30, 1904, the original cost of Asphalt streets was	$12,503,566.47
Commencing yith the year 1897 up to June 30, 1904, the city paid out for repairs of Asphalt	501,833.77
In the one year ending June 30, 1904, she paid out for resurfacing or building anew	61,684.00
	$13,067,084.24

Buffalo's population in 1900 was 352,000.
Cost per capita for asphalt pavements $37.12

The minimum and maximum cost for resurfacing during the year was $1.18, and $1.25 per square yard respectively.

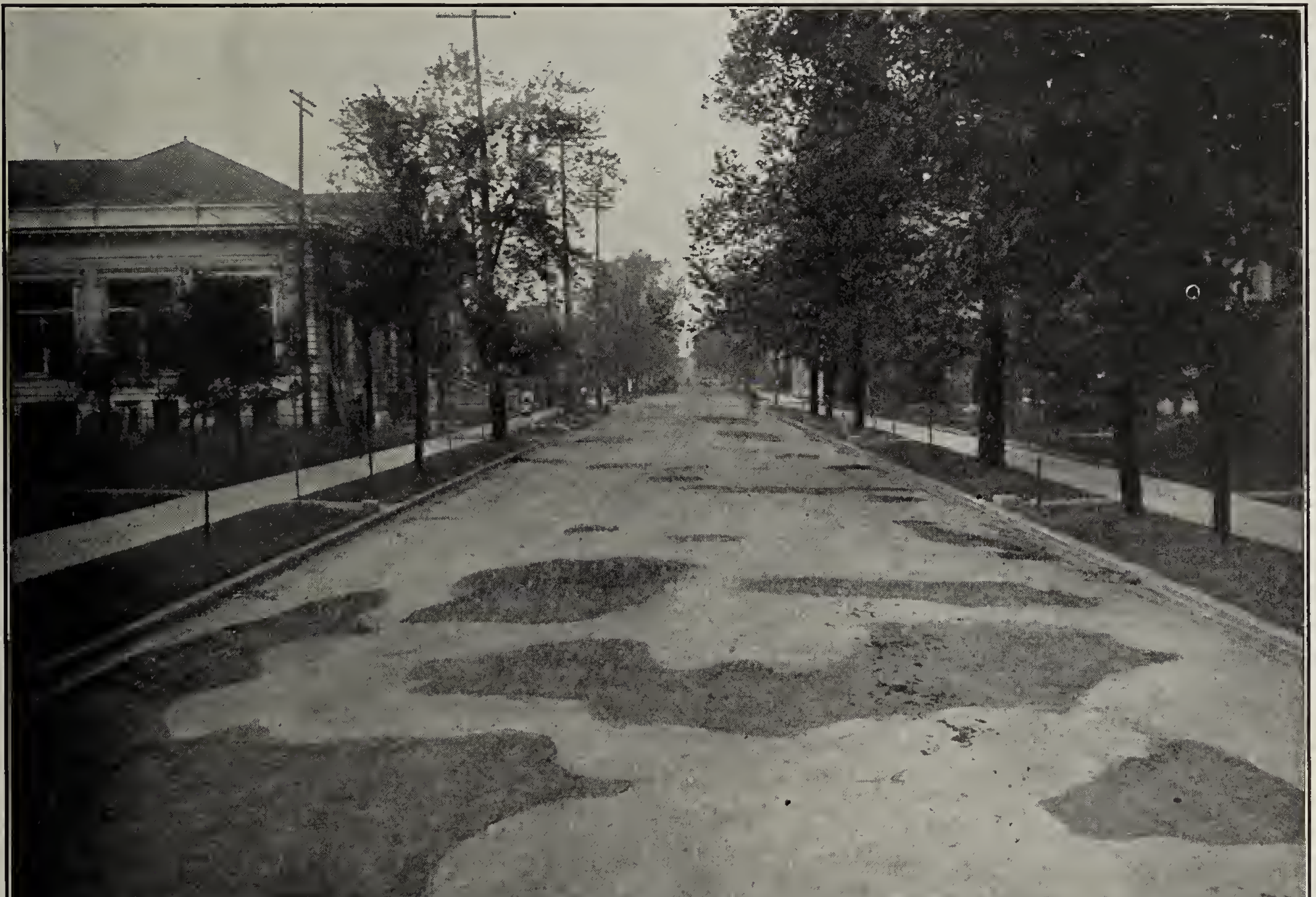
More than one-half of the asphalt streets of Buffalo now need to be resurfaced. Buffalo can not help herself, nor can you help Buffalo out of her deplorable condition, but you can prevent a like disaster overtaking your own city, by guarding against the use of material that entails so much expense to maintain, and that gets in a condition impossible to repair in so short time.

The Cost of Repairing Brick and Asphalt Streets at Syracuse, New York.

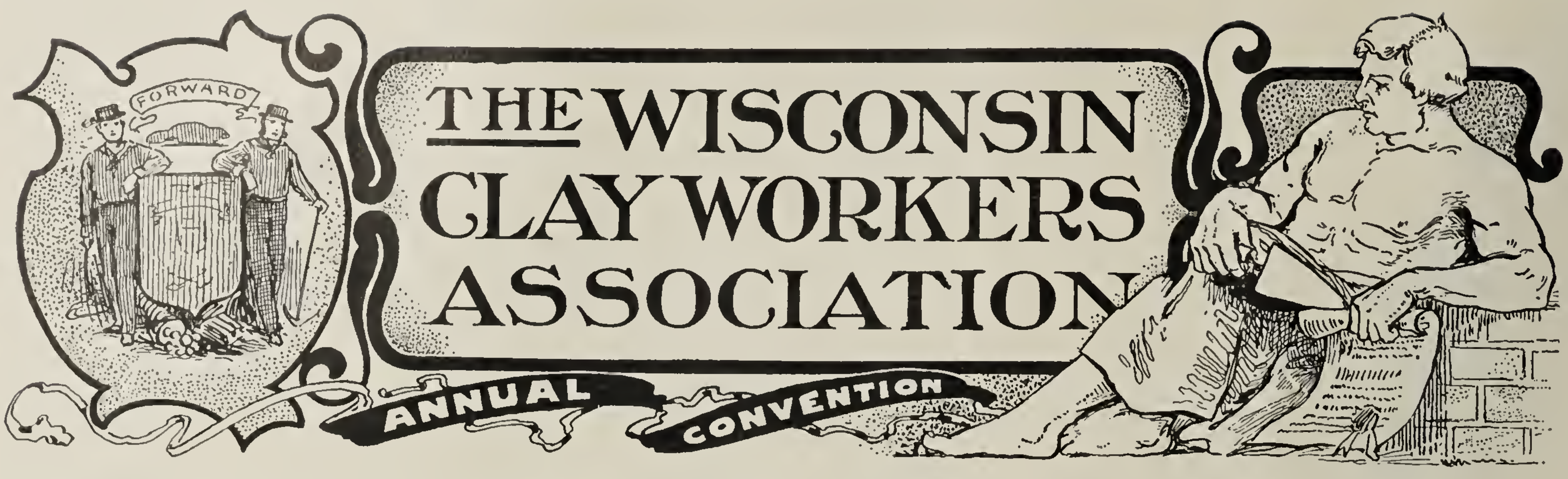
The city of Syracuse, N. Y., affords an equally interesting and instructive object lesson in the relative cost of maintenance of brick and asphalt streets. In 1902, the city paid out $2,656.40 for repairing her asphalt streets, and nothing at all for repairing the brick streets. In 1903, the item of expense for repairing asphalt streets increased to $4,586. For repairing brick streets, nothing. The commissioner of public works, Mr. Aaron R. Thompson, in his report for that year, says:

"As many of the pavements are rapidly passing into a state of decay the cost of keeping them in repair is likely to increase from year to year. Every effort has been made to keep the pavements in repair. During the year the Syracuse Improvement Co. entered into a contract with the city to repair all the asphalt pavements on which the contractor's guarantee had expired at a cost of $1.42 per square yard. Prior to the letting of this contract the pavements had been repaired by various contractors for $1.40 per square yard, but the department was hampered somewhat from the fact that the charter prohibited the ordering of the work to cost more than $50 unless by contract to the lowest bidder."

In 1904, the city paid out for repairing asphalt streets, nearly $10,000, and for repairs to the brick pavements, $120. When it is considered that the latter amount covered all the cost for repairs on over fifteen miles of brick streets while her asphalt streets totaled up less than thirty miles, the difference in cost of maintenance is seen to be enormous. With this fact demonstrated, it certainly behooves municipal officers to think several times before they burden their cities with expensive short lived asphalt pavements, when for less money they can put down enduring and sanitary pavements of brick. The pamphlet from which we are quoting contains a number of very interesting letters from city engineers who speak from experience and declare that brick pavements are unequalled for durability. A copy of the pamphlet can be had for the asking from Will P. Blair, President and Corresponding Secretary of National Paving Brick Manufacturers' Association, Terre Haute, Ind.



North Seventh Street, Terre Haute, Ind. Laid in 1893 With Asphalt. Photographed in 1903.


FORWARD
THE WISCONSIN CLAY WORKERS ASSOCIATION
ANNUAL CONVENTION

PROCEEDINGS OF THE SIXTH ANNUAL CONVENTION OF THE WISCONSIN CLAYWORKERS.

Held at Menomonie, Wis., March 9th and 10th, 1906.

THE CONVENTION was called to order by the President, Oscar Wilson, at 10:30 o'clock Friday morning, March 9th, who announced that the Rev. C. F. Niles would open the convention with prayer.

Rev. C. F. Niles: Let us worship. Holy Spirit and Heavenly Father, we come to Thee this morning as workers in this world. We have been created by Thee with power to work. We to-day represent the large section of the workers of the world, working for the upbuilding of cities; working in various ways for making society better, making life easier and making the world better. As we turn our faces up to Thee to consider the best methods of working our particular lines, we also feel that we must look to Thee for all things. May our thoughts in all directions be for the upbuilding of the senses and for the betterment of man in these particular directions. May our thoughts be centered in Thee. May we feel that without Thee it is impossible for us to have these thoughts. May we be imbued with the highest ideals and for the best things in this world. May we be filled with peace. And so, to-day as ever, we would ask for a new sense of Thy nearness—for a new sense of Thy presence—that we as workers may feel that we are working with Thee; that we are searching after thy truth; that we are looking for these ideals, and as we search after these, we feel that we can find them best if we work with Thee. Wilt Thou be with us; wilt Thou enrich our lives with new aims and powers, and wilt Thou at last bless us all and bring us to our complete ideals. Amen.

President Oscar Wilson.

The roll was called, to which 37 members responded.

President Wilson: I now have the pleasure of introducing to you our Mayor, the Hon. J. R. Mathews, who wishes to say something to us.

Address of Welcome by Mayor Mathews.

Gentlemen of the Convention: We had a few weeks ago the pleasure of welcoming to our city the Bankers' Association, and, while I should judge from the numbers present this morning that the clayworkers are not quite as numerous as the bankers in Wisconsin, I want to say that the clayworkers are of vastly more interest to us than the bankers. I noticed one thing at the opening of this convention that the bankers did not have, and that was the invocation. Probably the bankers feel that they can get along without any help but their own.

Now, it is particularly so with us that we feel more interested in the Clayworkers' Association than we do in the bankers', because our city is more dependent upon it and bound up more with it. If there is any association of men, or any class of people that we are more indebted to than any other for our prosperity and really our wealth, it is the Clayworkers' Association—those who are members of it.

We are proud of our brick industries in this city, and knowing that they are present with us here this morning, I would say to you that we are proud of our local management of our brick industries, but I do not like to flatter them. Now, the brick industries here afford to us largely, practically the only opportunity, or the only opening that we have for common labor. It employs largely all the common labor of our city and gives it employment and good wages a good part of the year. If there is anything that affects the brick industries, we see it immediately in the business interest of the city. If there is anything that affects it injuriously, we immediately feel it, and for this reason you can see that our brick industries are bound up with the interests of our city more closely than with any other association of men. We take more interest in them and more pride in them and we also hope and we also feel that when you are prospering, we are. You cannot prosper unless we prosper to the same extent, and we hope that the outlook for you during the coming season and for many seasons to come is bright. We hope that there is profit in your business; we hope it is to such an extent that you will at some time not far distant increase your business and your interests here. We have always tried to be fair with you in the way of dealing with you—in the way of taxation. We are not Socialists. "Live and let live" is our motto. As President Roosevelt said, we believe in a "square deal." We ask nothing of you but what we would be willing to do ourselves in turn.

Now, gentlemen, we welcome you and welcome you with open hearts. We hope that your stay here will not only be pleasant, but we hope that your meeting will be profitable to you as an associaton and in your business. While you stay in our city, if there is anything that you wish to see or anything that we can do to make your stay here more pleasant, we would be very glad to do it. If you wish to visit any of our public institutions, please make it known. The city is yours, and we heartily welcome you.

Gentlemen, I again bid you a hearty welcome to our city. (Applause.)

President Wilson: Mr. Clifford Chase, our Vice-President, was to respond to the address of welcome by our Mayor, but I have just received a telegram from him stating that it would be impossible for him to be present at this time. I therefore request that our Ex-President, Mr. Hinkley, of Green Bay, respond to this welcome.

Mr. Hinkley: Mr. President, Gentlemen of the Convention: Being called upon quite unexpectedly to respond to this address of welcome, I trust that you will excuse me for making it rather short and perhaps in some degree disconnected.

We are all pleased, in response to the welcome of the Mayor, to extend our thanks for that welcome, and we hope to take advantage of the many things he has offered us. I have been a member of this association and attended its meetings since it was organized, I believe in 1900. This is the sixth annual meeting, and I think I have only missed once. I remember at the first meeting that we attended when we first organized in Madison that Governor Lafollette gave us an address of welcome, and one of his chief remarks was that perhaps the meeting was for the purpose of raising the price of brick. We assured him that we had no such idea. We can say the same to the Mayor of this city—that we are not here for that purpose. We are here to swap experiences, and I think we do that more at the hotel than here. This meeting is devoted to the reading and discussion of papers, but when we get down to the hotel, we hear what every other man has done and the bad experiences that have cost him money. These experiences reminds me of an event while I was a boy on the farm over here in the central part of Wisconsin. One of our neighbors had quite a large field and in the center of that field was a single tree. He thought he wanted to cut that tree down, so one day we went out with an axe and a pair of colts. He looked around and thought he could tie the lines around his leg in the absence of any other place to tie his team to. He then took his axe and started to cut down the tree. When the tree began falling the colts started to run. Well, some time after, when the neighbors had rescued him—picked him up with his clothes torn and face all scratched up and bloody, one of them asked, "What did you do that for?" He said, "Well, just as quick as those colts started I saw where I had missed it." So, we are here to swap experiences—tell each other where we have "missed it before the colts started." I see some faces around here that I know can tell some experiences where they have "missed it," which would not have happened if they had attended these meetings before they met with their experiences through which they lost money.

A Group of Wisconsin Clayworkers at the Plant of the Menomonie Hydraulic Press Brick Company.

Now, the Mayor tenders us the freedom of the city, and I can assure you that we shall all take advantage of it, but I want to say one thing in conclusion, that if he or his chief executive of the city finds any of the members of this association in the hands of his policemen, to just send them up here and we will take care of them. (Applause.)

President Wilson: The next number on the program is an address by the President, which seems to be of a more or less stereotyped form for gatherings of this kind, but to carry out that part of it, I have prepared a paper briefly along these lines that I will, with your permission, read.

PRESIDENT WILSON'S ANNUAL ADDRESS.

Gentlemen of the Wisconsin Clayworkers' Association:

You have just been welcomed to our city by our worthy Mayor, Honorable J. R. Mathews, and while he has covered the grounds thoroughly, it seems but fitting that I should take this opportunity of expressing the sentiment of the Menomonie clayworking industries in saying that as fellow-craftsmen, we are also pleased to extend to you a hearty welcome.

The clayworkers of Menomonie are striving to maintain the high standard their product has set for the builders of the Northwest and of increasing the output and sales of their product until they now have a total output of about 25,000,000 brick per annum.

The clayworkers of Wisconsin no doubt appreciate the fact that clay products have not been used as extensively in this section of the country in the past as will be done in the future. The large lumber industry that has prospered for so many years from Wisconsin forests is now practically through with its harvest and it will be only a few years until the cutting of lumber in this State will be a thing of the past. All this has a tendency to increase the price of lumber and also the use of brick, and to meet the increased demand and supply a building material far superior and absolutely fire-proof is itself encouraging to all clayworkers.

The so-called substitutes for building brick—such as sand-lime bricks and concrete—are in a more or less experimental stage. All of these materials are unquestionably first-class for special purposes in connection with construction, but for building purposes, time will serve as the best evidence.

Your committee in charge of the program would feel that an apology is in order for its brevity. if it were not for the fact that they had tried to get a few more numbers on. but it was absolutely unable to get any other assignments accepted. The members of this association should not be too selfish and expect a first-class program to be made up for their benefit by a few individuals. Remember the words in the Good Book, which say: "It is more blessed to give than to receive," and apply this to any information you may possess upon the various subjects that confront us at these gatherings. Our annual conventions need the staunch support of every member when called upon to handle any subject on the program—either large or small—and it is essentially necessary, in order to keep abreast with the times and for the welfare of our organization to accept the assignments on the program and handle them the best you can. While our program is brief, we hope that each member present may find something of value in each subject and its discussion.

At our last annual meeting in Manitowoc, a resolution was adopted authorizing the Secretary to drop from the roll all members who were in arrears in their dues for two years or more. Acting upon this resolution and Section III, Article 3, several names have been dropped; and, on account of our admission fees and annual dues being so small, it does not, in my opinion, give us as large a revenue as we should have to carry on the work before us. Under the circumstances, I would recommend that Section 1 and II of Article 3, of our Constitution and By-Laws be revised and the annual dues be substantially increased to provide larger revenues.

S. J. Hewson, Menomonie, Wis.

Inasmuch as the printed proceedings of our annual meetings have heretofore been distributed among the clayworkers of the State, regardless of their membership in the Association, I would further recommend that a resolution be passed at this session providing for the printed proceedings to be sent only to members of the Association in good standing.

In closing, I want to thank our worthy Secretary for his efforts to make this meeting a success, and also to thank the members who are contributing to the program, which we will now take up. (Applause.)

Mr. Hinkley: Would it not be proper at this time, since certain recommendations were made by the President, that a committee be appointed along these lines to go over the matter thoroughly and report on the changes recommended tomorrow. I make a motion to that effect.

The motion was placed before the convention on a vote and carried, and the President appointed Messrs. Kennedy, Ringle and Bright to form this committee, whereupon Mr. Kennedy begged to be excused on account of pressure of other business. The President then appointed Mr. Hinkley to act on said committee in place of Mr. Kennedy.

President Wilson: I wish to say, gentlemen, that we slipped through this portion of the program quite readily. The Secretary has some communications to read which, if there are no objections, we will have him read at this time.

Secretary Hamilton: I will first read a communication which was received from Mr. E. R. Buckley.

LETTERS FROM ABSENT MEMBERS.

Rolla, Mo., March 7, 1906.

To the Wisconsin Clayworkers' Association, Menomonie, Wis.:

My Dear Friends—The time for another meeting of our Association has arrived and your humble servant must be numbered for the third time among the absent. I have read with pleasure the enthusiastic reports of those who have attended the convention in our sister States and I anticipate much greater pleasure when I read the proceedings of the Wisconsin Association meeting.

I have often thought that the members of an association of this character, coming together for mutual help, are often too sensitive over their mistakes or failures in business and too secretive about their successes. It has been demonstrated, over and over again, that any help that we may render our brothers will not injure us or our business. We all desire to attain success in our several vocations, but we should never let this ambition encompass us to such a degree, that we are willing to walk over and ruin another in order to accomplish this end.

I, therefore, suggest that you bring your troubles before the association and that you give aid to him who may seek it.

As the clayworking industry develops in all parts of the State, each will receive his share of the benefits. Manufacture the best brick you can with the material at hand and as cheaply as possible. Never lead yourself to believe that you are making the best possible product, for the man who is satisfied, adds very little to the progress of civilization.

I have observed everywhere, in every industry, that there is unnecessary waste, frequently enough to make an unprofitable business profitable. Does your machinery run smoothly? Do you use more men than others in handling your brick? Does your fuel cost you more than it does your neighbor? Your fuel costs you 5 cents per thousand, your labor, 20 cents per thousand, and delays on account of imperfect machinery, 10 cents per thousand more than your neighbor. This is only 35 cents per thousand. But, should you produce 5,000,000 bricks, it would be a loss of $1,750.00

There is greater profit to the manufacturer in the reduction of the cost of production than in an increase in the price of the finished product. When competition and low prices make business dull, it is the man who knows how to economize in the cost of the production who feels the depression least.

This association has resulted in great good, not only to the brick manufacturers, but to the people of the State as a whole. It is not only a pleasure, but an honor to be one of its members. Do not permit your interest in it to weaken. Give to it all you can. Receive from it all that it offers.

May success, prosperity and happiness ever attend you and may each succeeding meeting be better than the last. Believe me to be.

Your friend,

E. R. BUCKLEY.

Secretary Hamilton: Mr. Buckley encloses a check for $2.00 for dues. I do not think that we ought to accept this. The committee on membership voted him an honorary member and we did not allow him to pay anything at that time. I think we ought to have some expression from the members on this matter.

Mr. Kennedy: I make a motion that the check be returned with thanks and also that some expression be made to him thanking him for his letter.

Mr. Hinkley: I would like to say that this association owes its origin and its success to the efforts of Dr. Buckley. He travelled all over the State, inspected every brick yard, I think, in the State, and every clay bank that looked as though it held clay, and after doing all this and becoming acquainted with all the brickmakers, he sent out invitations to them to come to Madison, and was the prime mover in the organization of this association, and I heartily concur in the motion made by Mr. Kennedy that we tender him our thanks for his good wishes and for his letter, and to return his check, but to tell him that he is an honorary member as long as he continues to send us a letter every year.

Motion seconded and carried.

Secretary Hamilton: I have here another letter, from Mr. P. G. Duerrwaechter, which I will read.

South Germantown, Wis., January 23, 1906.

Mr. J. C. Hamilton, Grand Rapids, Wis.

My Dear Sir—It is my unpleasant duty to inform you that my son Arthur, who was the Secretary of the Wisconsin Brick and Tile Company, located at Granville, Wis., passed away October 29, and was buried November 1, 1905. I therefore forwarded your invitation to John Flanagan, Lannon, Wis., who is the President of the above named company, with an urgent appeal that he will take the place of my son and attend the meeting, in which you may assist me by writing another letter to him. This, together with mine may induce him to attend.

Enclosed, find check for $1.00, for back dues which I hope you will please place to his credit, and if there are any further charges or accounts against him, I hope you will report it to me and I will gladly remit.

The continuance of membership I will have to leave to the disposition and wishes of the officers of the company and the successor of my son.

Yours truly,

Ph. G. DUERRWAECHTER.

Mr. Joannis: I move that the Secretary be instructed to write a letter of condolence to Mr. Duerrwaechter. I was very well acquainted with his son and knew him to be a very nice fellow.

Secretary Hamilton: I will write Mr. Duerrwaechter a letter, but I thought it would be well to appoint a committee to draft a set of resolutions to be forwarded to him, and I make a motion to that effect.

After the motion was seconded, the President put it to a vote of the convention and it was unanimously carried. The President thereupon appointed Harry de Joannis, S. Weidman and Wm. Gunther as a committee to frame said resolutions.

President Wilson: Have any of the members anything to present to the meeting at this time?

Mr. Kennedy: Mr. President, would it not be a good idea to appoint some committee, or that some steps be taken at this time regarding freight rates that we have been considering so long? I have been a member of this association for four years or more and our talks on this freight rate problem have been very much the same every year—very much like a crowd sitting around a country store—all air. I think we need a change.. I think we ought to say what we are going to do. At first we waited for the rate commission to be appointed. We did wait and we know what they did. They cannot be expected to come and sweep our back door. We have to go to them and lay our case before them. I have traveled through all the northern part of Wisconsin and have visited the dealers there. I know from the prices they are receiving that we are not getting what every man is entitled to, as Mr. Roosevelt said, "A square deal." I think the time is ripe; we are here. I think that this association is composed of men that are willing to meet that phase of the question and meet it now. We do not want men that are afraid to show their faces and afraid to go to some trouble. If our President will appoint a committee and that committee feels that they are in position to come out and let their position be known, and I think that we can find timber in this crowd that can come out and bring this matter before the Railroad Rate Commission, and that will bring it where it will be disposed of. This making resolutions every year and talking the matter over at our annual meetings and then postponing the matter, will not go. We will have the same question next year. I think now is the time to take it up, and I believe if the Chairman will appoint a committee, this committee should take some immediate action and let its position be known before the Railroad Rate Commission. We do not have to fear the railroad companies. You will have to take a stand before this commission. You must take the initiative. They have no respect for the man that comes out and cringes to them. We want a square deal in this matter. Why are we not getting it? Because we do not let our wants be known. (Applause.)

President Wilson: I believe there was a committee appointed last year to take this question up and that Mr. Kennedy was one of them. I should like to ask Mr. Kennedy who the other members of the committee were supposed to be.

Mr. Kennedy: The committee was held over for several years. Mr. Clifford Chase was one of them and Mr. Dickinson the other.

Mr. Hinkley: I move that the Chair appoint a committee in conformity with Mr. Kennedy's recommendation. I believe that the committee that acted last year was appointed for the ensuing year only and that it dissolves at this convention. I, therefore, move that a new committee be appointed at this time.

President Wilson: I wish to say, gentlemen, that several papers on this subject have been called to my attention and I have had one of our local attorneys look it up to enable us to decide what was the best action to take from a legal standpoint, if from no other, and he has not made as detailed a report as I had expected, but I will have it later in the day, or at the latest, tomorrow morning, in such shape that it will be a brief opinion as to what rights we might have from a legal standpoint.

Mr. Ringle: I do not know what authority the committee had originally, but I wish to add to the motion that this committee be authorized to act on behalf of the Wisconsin Clayworkers' Association—to represent the association before the Railroad Rate Commission as a whole.

Samuel Guenther, Port Washington, Wis.

President Wilson: It would necessarily follow that it represent the association.

After the motion was seconded the President put the question to a vote of the convention and it was unanimously carried.

President Wilson: Is there anything further to come before the convention at this time? I will announce this committee later.

Mr. Ringle: I do not know but what I may be somewhat early, but I move that the Chairman be authorized to appoint a committee tomorrow to select a place for the next annual meeting, and also a committee to appoint the names of officers for the ensuing year.

Motion carried.

President Wilson: I will say that I will not appoint the committee until later—possibly I will be obliged to wait until morning on account of some doings that we are going to have this evening that might conflict with the working of the committee somewhat—possibly they might go to lobbying too much. I wish to say, gentlemen, before adjourning for the noon recess, that the superintendent of our schools has asked me to extend an invitation to spend a few moments in the schools immediately after noon—that is to say our program commences again at 2 o'clock but we can spend an hour without any inconvenience from 1:30 to 2:30 in the schools and be able to get through with our afternoon's program. I should like, therefore, very much if the members would accompany me through the manual training school and see the boys at work there.

It was moved and seconded that the convention adjourn for the noon recess. Carried.

SECOND SESSION.

Friday Afternoon, March 9.

After the meeting was called to order by the President he announced the first number of the program, "Brick vs. Concrete," by Mr. John Ringle, of Wausau.

"BRICK vs. CONCRETE."

By John Ringle, Wausau, Wis.

Mr. President and Gentlemen of the Convention:

I assume that the subject assigned to me has reference to the clay brick, which has a record coextensive with the history of mankind. It has been in competition with and demonstrated its superiority over all classes of material for permanent construction, whether natural or artificial.

It is, therefore, perhaps, useless to waste words extolling its merits, when there are none to deny them. From every point of view, resisting the elements of decay, fire or water, uninfluenced by the "gnawing tooth of time," overcoming the effects of heat or cold, or in supplying every artistic design in its natural and permanent color, the clay brick stands without a rival and supplies every demand.

John Ringle, Wausau, Wis.

I understand that at least one of the purposes of the Clayworkers' Convention to be, the promulgation of experimental and scientific facts, for the further improvement and maintainance of the quality of our product, and to perpetuate its superiority. If, therefore, we take occasion in our proceedings to refer to a competetive material—cement concrete—it is not for the purpose of depreciating its well known merits, for in its proper place it is a valuable auxiliary to the clay product.

Since the consumption of the perishable material for building purposes, timber and lumber has reached the period of its limitation, there will no doubt, be ample demand for all good materials produced by nature or science to supplly the wants of man. We can, therefore, hardly be accused of selfishness in performing a duty we owe to our patrons and the general public, in calling attention to the defects of the so-called cement block as a building material.

The past several years has been an era for the introduction of building material in competition with clay products. The seller of cement block machine in fifty or more varieties has exploited the country. People have been led to believe that with a $300.00 machine, a sand bank and a little cheap cement, any ordinary person in a back yard could produce a cement block, equal, if not superior, to any building material on the market and at a less cost. Visions of riches thus loomed up on the horizon, and as a result there is scarcely a hamlet which is not blessed with one or more cement block machines. Profits thus far have only been realized by the machine man and the manufacturer of cement.

Numerous impediments have made their appearance, checking the considerable use of the cheap cement block as a building material. It was found that cheap blocks could only be produced at a sacrifice of their quality, and that even if well made and strong enough, they are not a good building material. Moisture penetrates the cement block—even the hollow block—and the inside of the building is damp. Various preparations for saturating the block to overcome this effect are advertised. None is entirely successful. A man who builds a house wants to come in out of the wet, and not have the wall plate commence to decay as soon as laid. Aside from this, are the disastrous effects of expansion and contraction causing cracks in the walls, and the tendency to efflorescence (saltpetering) that usually makes its appearance after every considerable rain. This latter might be tolerated for it adds variety to the otherwise sombre appearance of the structure. These are the defects of the good cement blocks. What shall we say of its unreliability? The tendency of the maker for commercial purposes, is to make a cheap block, by a haphazard process, and the use of an insufficient proportion of cement of unknown quality, and, therefore, weak and uncertain. The defect of weakness in a cement block cannot be readily detected, while a poor brick, not properly made or burned, can be detected at a glance. My information from men of experience is, that the difference between a good and inferior block is liable not to be discovered for several years. The purchaser must, therefore, rely wholly upon the integrity of the maker. I will leave the cement block by quoting the words of Lauer, of Chicago, a man of much experience in the block business. He says, "Soft, absorbent blocks are no more fit to enter into residence construction, exposed to alternate rain and frost, than the myriad of water-guzzling hollow concrete blocks now flooding the market. There is a legitimate field for genuine concrete, but neither the soft, hollow clayware, nor concrete in hollow form as now produced on one thousand and one different hand machines by as many different men and as many different mixtures, are fit materials to use for exposed walls in residence construction."

As to cement concrete construction in other forms, it is also believed that this is being carried beyond its proper limits. Concrete structures involving the steel re-inforced method are subject to the expansion and contraction of large cement bodies. In addition the porosity of the material is such that under many conditions, it may cause the steel to corode and the structure to crumble within the life of man. From present experience, such construction is at least of doubtful value. The matter is comprehensively stated in an editorial in "Carpentry and Buildng" which says, "Many engineers and architects are of the opinion that the use of concrete is being carried too far." The manufacture of cement products for building purposes should require at least as much scientific and technical knowledge and ability as the manufacture of the clay product, leaving out the question of human selfishness and as yet I have failed to find a past master in the art of brickmaking. In a well burned brick, all perishable organic and combustible matter that may be in the clay has been destroyed and removed in burning and a stable combination formed. The result is durability, strength, and beauty, and the elimination of all hazard and doubt.

We sometimes meet the claim that concrete has superior fireproof qualities, while men of experience need no proof of the fact that burnt clay is the only fire-resisting material available for building purposes, yet it may be proper to quote from the report of the Insurance General Loss Committee on the Baltimore fire, perhaps the severest test on record. "Well burned brick and plain terra cotta are the only materials that stood the heat with any degree of success. Granite, marble and ornamental terra cotta and all kinds of building stone prove a failure when exposed to a fierce heat."

A material extra premium should be charged on all buildings built or faced with granite, marble or any building stone. The percentage of loss on these materials has been exceptionally heavy, and will be so from an exposing fire even in cases where the loss on a brick building should be nominal."

The report concludes as follows: "There is many a lesson to be learned as a result of the Baltimore fire, and the wide awake manufacturer of building material will seek to make none but the best, and he will see that it is properly put in place, as the capitalist who puts money into fireproof material will come from "Missouri" and will have to be shown. As in the future much will depend upon the kind of material and manner of construction in fixing of rates for insurance. The material that has stood the test best can be spelled with five letters and that is B-R-I-C-K; next comes terra cotta, and is followed by porous and semi-porous tile."

After all this has been said, it may not be out of place for me to add in conclusion, that it is not sufficient for us to know these facts. We are aware of the great advancement made in the manufacture of clay products during the past decade, and know that our product is the best. Does the public know? Our competitors are intelligent men and do not fail to advertise their material. Building will in the future as in the past constitute one of the important functions of man. We should not only endeavor to maintain the lofty position which our product has attained, but our aim should be ever forward both in the quality of our materials and as to its place in the building world. (Applause.)

With your permission I will read a little poetry which I think is very befitting on this occasion:

From morn of man, when clay inhaled the breath of life,
From Babel's dizzy tower, where elevation caused strife,
From Pyramids' ancient pile, celestial guard for tartar foe,
What through time to date, is favorite on builders' row,
And ever will remain, while rivals grow sick?
Say, shall we write it CONCRETE or write it BRICK?

From Chicago's greatest fire, Baltimore's seething hell,
What sentinel gave answer, "All is well!"
Of whatever make, common, vitrified or pressed,
When each has a mission and for it is best,
Let maker's tools give answer, barrow, shovel and pick.
Will they make it CONCRETE or call it BRICK?"

What fills labor's wants and that of finance high,
Rears monuments of art into the sky?
Not monopolies, easy mark, not that of graft,
The balm of summer day, a bar to north wind's draught,
Let it ever lead the way, till time shall cease to tick,
And not write it CONCRETE, but write it BRICK.

Then may the guessing stew (witches stew) to cooler shades retire,
And not block the path of that, fit to go up higher.
Though in recent pretense, but a stranger in the camp,
It has served a good domestic in places which are damp.
When railroad rates, unjust rebates, give us cause to kick.
Then let it be the CONCRETE and not against the BRICK.

(Applause.)

Discussion.

President Wilson: There is no doubt a great deal in this paper for discussion. I would be glad to hear from anyone who has anything to offer on the subject. Mr. Bright, have you any question to ask Mr. Ringle on this subject?

Mr. Bright: No, not particularly, but we have a man here who represents a paper which supports the cement block.

President Wilson: Mr. Covey is the representative of the Improvement Bulletin. Have you anything to say on the subject?

Mr. Covey: I do not know anything more about the manufacture of hollow blocks than I do about the manufacture of brick. Hollow block, as you know, and their manufacture, are in their infancy. People who have been making brick for years and years think they have a great deal to overcome. Of course, the brickmakers have to put up with all sorts of original material—that is one of the things that you are figuring against and that is what you are discussing. Now then, the hollow block men have all that to learn yet. I am not an exponent of the hollow block; I am not advocating one or the other; but, as I pass around from one brick yard to another, and as I come into contact with the hollow block man I see a few of the things that pertain to his particular line. You will notice that in our journal we do not advocate the destribution of any product. You will also notice that is rather peculiar—in fact, I have been almost at my wits end to get anyone to advertise the sand lime brick. They are still at an experimental stage. In time they will get it a great deal better than now. The trouble seems to be in getting the right combination of moisture, cement and sand. You cannot get the right amount of moisture with the sand and cement. It makes no difference what kind of cement you use, you cannot always get the right combination—that is the trouble. Now, with poor brick that enters into its manufacture and the responsibility falls back on the manufacturer. The hollow block man may for a while be able to shift his imperfections on the consumer simply because his method of manufacture does not develop the quality. I think, therefore, listening to the foregoing paper, that if a hollow block will last for a year or more it will stand for a long time. It is new yet. The cement block must absorb enough moisture to satisfy the requirements of the cement. I am telling you this without knowing much about it, but I am just telling you what I see. Some of the hollow block men are now making what they call a "slop block," using more moisture to satisfy the requirements of the cement, if possible. I think that some of these men are going to come to the right point. I think the dry block is a bad proposition. It has to absorb the moisture some time. So, about all that I can tell you is, that in my opinion the hollow block is a comparatively new thing and one of the future.. We do not know how soon, but they are working at it and are trying to perfect it. You who have been a good while making brick must give the hollow block men a chance to correct their errors. They may make a success later on. I thank you.

President Wilson: In speaking, Mr. Covey, of moisture, do I understand that the moisture all goes into the hollow block at the time of manufacturing it, or after?

Mr. Covey: Now, you are going to catch me on my lack of knowledge; but I know that they put these hollow blocks up in piles and put water on them; I know they do that. They attempt to supply the lack of moisture. You have all been to these conventions; you have seen these hollow block machines demonstrated. These machines are all good as far as the hollow block machines are concerned. The trouble is the proper combination of ingredients is incorrect. At a convention that I attended some time ago there was a man there that had a granite product. This man was from New York, and he has arrived as near to the proper proportion as it is possible. The hollow block men have to find this out. You know there is a lot of stone used in buildings that is worthless—a lot of lime stone, etc., that scales and peels off from year to year. There is worthless stone used in buildings. The hollow block will be better than that if they can get at the right combination. This man from New York made his product of stone in a mold and gave the mixture time to absorb the water and take into itself the proper amount of moisture. His mixture was more nearly correct, I think, than any product of that character.

Treasurer Oscar Zimball, Sheboygan, Wis.

President Wilson: Has anyone else any questions to ask on this subject?

Mr. Crabtree: I would like to ask if any of the clayworkers in Wisconsin are doing anything in the line of hollow clay building blocks—such as the vitrified blocks 8 x 16 in size made in Indiana and Ohio. I have inquired of several and cannot get any information. I am entirely ignorant on the subject myself. I would like to know how they do it here if there is anyone here that is doing it. So far I have been unable to get any information on the subject.

President Wilson: Our friends in Tramway, about five miles from here, have made more or less hollow clay blocks but they do not seem to have any representative here at this convention. Probably they are not running now, and I do not know how much stock they have on hand, but I understand that they have some.

Mr. Covey: Don't they make hollow block at Chaska, Minn?

President Wilson: Yes. Mr. Gunther, don't you know anything about the subject?

Mr. Gunther: No, sir, I made a few only.

Mr. Farnum: At Grantsburg we are successful in making them. We make them 4 x 8 x 12 and 18. We have made none of them extensively but have only fairly started. You can burn them vitrified and hard enough for ordinary use. They will take the place of concrete. You can lay up a course of common or veneer brick on the outside and use these on the inside.

Mr. Covey: Yours are like the Mason City tile?

Mr. Farnum: Yes, about the same.

Mr. G. C. Stoll: If you are inquiring about vitrified blocks made in Wisconsin; I think at the present time there are none, although there are some clays in Wisconsin that will make them. There is no one yet making vitrified blocks in Wisconsin like they do in Indiana and Ohio. There is a difference between the clay block laying up in the wall and the cement block. When you make a clay block 8 x 8 square and 16 inches long, you have a surface for your mortar to go on 8 x 8 x 16, and in the cement blocks you have only a surface for the mortar to go on 1½ in. to 2 in. They have no trouble with the clay blocks, as I have seen them, as they have with the cement blocks in this respect.

Secretary J. G. Hamilton, Grand Rapids. Wis.

Mr. Weidman: What is the relative size of the concrete space and the amount of the absorption?

Mr. Joannis: That would depend upon the burning of the clay block. I took the best cement blocks the other day and it took about two quarts of water. Vitrified clay blocks will take about one pint of water.

Mr. Stoll: Mr. Joannis, what make of that clay block did you get?

Mr. Joannis: It was an Indiana block. I was in Chicago at the time.

Mr. Stoll: Did you ever try one of the Mason City blocks?

Mr. Joannis: No, it depends upon whether it is made from a shale or what kind of clay, and it depends upon the burning. I think the more the clayworkers know what the cement people have to put up with in manufacturing their hollow blocks, the less they will be afraid of competition in this direction. There are two things the cement people cannot overcome. In the first place, the manufacture of any cement product depends largely upon personal factor. That is to say, I saw a report the other day of a large meeting where the person who read the paper insisted that a great advantage that the hollow concrete men had over the rest was that he could use ignorant labor. Therefore, you get the most ignorant kind of product from such labor. Personal factors do not enter into the manufacture of concrete blocks. A man, if he does not get quite the correct mixture of concrete, sand, etc., will simply put so much more water to it, or so much more sand to it, as the occasion may require, and you can take any kind of block of brick that you want and you will find that they vary very little. In the manufacture of the cement itself great care is taken. Take for instance the Alpha Portland Cement. I went through their plant. Their output is 12,000 barrels of cement per day. This cement goes through a very great many different processes before it is turned out a finished product. After each stage of its manufacture, it is carefully inspected and tested to insure its absolute purity.

Mr. Farnum: I would like to inquire of some one if block or brick, or anything that is thoroughly vitrified, is not nearly as impervious to the elements as a block of iron or a solid mass of iron?

Mr Stoll: I should say it was practically impervious for all practical purposes as iron or steel. It is of very nearly the same density. There is this difference—iron will rust and vitrified material will not.

President Wilson: If there are no other questions to be asked on this subject we will proceed with the program. The next number on the program is the subject of "The Use of Waste Heat from Common Up-Draft Kilns for Drying Brick, vs. Open Air Drying," by Mr. Kennedy, of Manitowoc.

THE USE OF WASTE HEAT FROM COMMON UP-DRAFT KILNS FOR DRYING BRICK VS. OPEN AIR DRYING.

By G. W. Kennedy, of Manitowoc, Wis.

Mr. President and Gentlemen of the Convention:

I prepared a paper on the subject but I have left it at home. I remember it pretty well, though, and will, therefore, speak extemporaneously. I should very much have preferred to have been called on before Mr. Ringle. I assure you that I think Mr. Ringle has set the pace altogether too high for me to follow. When this subject was assigned to me, I thought I had an easy task. It is a question that has cost me many anxious moments in my business, and I have made a thorough study of it through trouble and experience, I thought it would be an easy task to tell the convention all about it. But people do not care to hear your troubles, and when I came down to write the paper, I found it was a very hard matter for me to do. It is like the story you have all heard: "Laugh and the world laughs with you; weep and you weep alone."

Before saying anything about our waste heat, I want to first give you a description of the dryers as they are to-day. Our experience with dryers do not differ very much from the experiences of other people. I do not know of any other way of putting it except the way our foreman, Mr. Frickle, at Mantiowoc, did when I commenced to get up this paper. I went to him and asked him for a few pointers about the dryer as it worked there. He said, "Well, you are just like all other young men; not one of you will tell the truth. You commence on a scheme and tell the other fellow how it works and the other fellow will say the same scheme does not work with him." Our experience in dryers, I think, is the same as that of every other man that has had anything to do with dryers, and that is that when we begin we do not know what we are up against. We think we do, but the facts are we do not. Some man comes along and tells you that he can put in a dryer that will accomplish certain things. At first you are not certain that he can, but he insists upon it and you then believe that he can. If our clayworkers of Wisconsin would attend these conventions and exchange ideas they could save a great deal of money for themselves. Our dryer at Manitewoc is a combination dryer. It is about 140 or 150 feet in length, with twenty tracks, each track holding 20 cars. This gives the dryer, when full, a capacity of 400 cars of brick, or loads. Each car holds 544 brick.

Our brick, after they leave the molding machine, contain about one pound of water which has to be absorbed in the dryer. The brick when they leave the machine are loaded on these cars on pallets and these cars are then pushed into the dryer. There is a gravity system which carries the cars from the machine down through the dryer. We have a fan at one end of the dryer that blows the air up under the cars. This air escapes under the cars through the openings in the planks. Then we have a fan at the other end of the dryer drawing out this moist heat. This keeps a constant circulation of air through the dryer. It makes no difference whether the dryer is hot. There must be a circulation of air. After we got the kilns to working in fairly good order, we thought that waste heat ought to be used, so I commenced to figure, and finally put a pipe four feet in diameter running the whole length of our kilns. There is about 20 feet of space between each of our kilns, and this pipe run the whole length of the kilns, and at right angles to this four-foot pipe, there is a two-foot iron pipe extending the length of each kiln and about six feet from the top of the kiln. These two-foot pipes are connected to the four-foot pipe and a damper is arranged in the pipes so you can shut off any one or all of them, or you can draw from any or all of them. There are a great many systems of taking the hot air or heat from cooling kilns. There is no patent on it—the system that we are using—it is open to everyone. If there is any good in it I am perfectly willing they should have it. The ducts or air chambers are at the bottom of the kiln and the air cannot be taken from a cooling kiln until you have stopped firing. These pipes are connected with the fan which draws this air and blows it right into our dryers, coming in direct contact with the wet brick. The saving in that is considerable. It is more than you men would believe if I told you. The night is our worst time. The air is cooler and damper. If you want to get your brick dry you must have circulation, and the air must be dry and warm. Pure, hot and dry air is what is required. This air coming in contact with our brick does not check them for the reason that the brick have already been exposed to the air. If warm, dry air is not used before turning on the waste heat the brick commence to crack. Especially is this so in the spring time or the wet season of the year and on wet nights, or after we have three or four rainy days, which we often have on the lake shore. There we have a great deal of heavy weather.

Now, as to the open-air drying. It costs us more to take the brick and put them in the drying shed in the yard—about 15 cents per thousand more—than it does to put them in the dryer. There is the cost of labor from the machine to the racks. This is often offset by the cost of keeping the dryer hot. We figure that we have to have a fireman there anyway. He must keep up his steam. If we have no kiln from which we can draw the heat, it costs us 19 cents per thousand for the coal.

As Mr. Ringle said, and as Mr. Hinkley stated, if people would be more honest and tell their experiences—even if they are laughed at afterwards—it would be much better. They say that "Open confession is good for the soul." That is the best we can do. My estimate, of course, does not include the men's salaries; it does not include the oil for the machinery, nor the wear and tear. It costs more to take the bricks from the machine to the racks than it does through the dryer for the reason that it is a little farther away. By the dryer system the brick are not handled at all until they reach the hands of the pitchers.

Now, I am not sure that I can say anything more on this drying business. There is one thing that is certain and that is this: This question is very important to every brick man. You can turn out as many brick as you please from the machine, but the trouble is to dry them. When you visit a man's plant and ask him, "What is your output?" he will tell you the output of his machine. When you ask him how many he can dry he will tell you how many he has room for on the yard. But you ask him how many he can dry and he will tell you that that depends upon the weather. The advantages of a dryer is that we can dry brick even if the weather is wet and rainy. I will be glad to answer any question that any of the gentlemen will ask, but I do not think it is wise for me to take up any more of your time. (Applause.)

Discussion.

Mr. Covey: I would like to ask Mr. Kennedy, is that extra cost per thousand for drying not offset by the fact that you can deliver the goods quicker when they are wanted?

Mr. Kennedy: We claim that advantage, and it is a saving. While it costs us 19 cents to dry our brick, it costs us that much more to take them from the machine to the racks and from there to the kilns, and besides, we are ready to dry our brick at any time, rain or shine.

Mr. Covey: And you know pretty near when you can deliver the brick to your customers?

Mr. Kennedy: Yes, certainly.

Mr. Potts: In drying brick on the racks, is there not some danger of their being rain marked, etc.?

Mr. Kennedy: I inferred a while ago that brick men will dodge the question. Now, I had a paper written out on this subject but I forgot it, and I would not attempt this point without my paper before this meeting. However, with our dryer we do not have the trouble with rain marked brick. The brick are thoroughly dried and are not exposed to the elements. There are so many brick put into the dryer and there have to be so many brick taken out of the dryer every day in order to make room for the brick that are constantly being made. We work every day. Some days we may stop for a few hours on account of too much water in the clay, but the next day we work a little over time, so that at the end of the week we are up to our average. Because of our dryer, our brick are of a better shape and we save a great deal of the flashes that a great many brickmakers complain of. These flashed brick are caused by handling them in the racks. When the brick are put in the racks for drying you will find the ones that are on the outside of the rack are dryer than the ones on the inside, but the men taking them from the racks do not stop for that. The consequence is that when you take them out of the kilns after they are burned, they are flashed. I do not think a yard is up-to-date without a dryer. When there is any trouble with the dryer, the men will come to you and say what the trouble is. You go in there with him. It is very hot at times in there and the man that is with you will get great satisfaction out of the fact that the "old man" is in there and he will not complain any further. You see, the men complain of their hard lot and of the heat in the dryer.

Without a dryer you cannot start as early in the spring, neither can you work as late in the fall. In the meantime, your expenses are continually going and your office force must be kept up and when you are not making brick you are increasing the cost of manufacture.

The vital point in our dryer, as well as all dryers I think, is to get the air under the cars and get it distributed. If you are not very careful with the dryer you are apt to get the openings in one section of the dryer larger than the other and admit the air into one section faster than the other—stealing from one another. There is only one way that I have been able to do and that is by taking an anamometer and by it knowing the amount of air going into each section and seeing that it is being equally distributed.

G. W. Kennedy, Maintowoc, Wis.

A member: Does it take a little longer drying the brick when you take the heat from the kiln than from the outside?

Mr. Kennedy: Sure, because the brick take the air that is thoroughly dry.

A member: You take the cool air from the outside and you have warm air but not dry air. How much difference is there in the time?

Mr. Kennedy: There is a difference of about eight hours, and it takes about sixty-four hours to dry the brick. There is another thing that I find to be true, and I think that every brick man that is running a dryer will know this, and that is what style of dryer is best for him. One dryer that will work on one yard will not also work on another. There is the difference in the kind of clay used. Some clays dry easier and some are more tender and crack more easily, and I think that every man will have to experiment on his own account as to this. I know at our yard we turn on our heat and in the morning when we come to set our brick we find a great many of them cracked. There is only one way to accomplish anything in brick drying, and that is to stick to it. You must study the nature of your clay and regulate your hot and cold drafts of air accordingly. You can get at the bottom of it, or at the right way, only by experience.

There is one thing about this Clayworkers' Association and that is the attendance of the machine men. They come here and hear our complaints and troubles and go back to their firms, and then the machine houses get their experts to work, trying to make some contrivance that will overcome the troubles that they have heard through their agents at these conventions. There is another thing. You meet your competitor and tell him your troubles and he will tell you his. You compare notes and help each other in that way.

Mr. Potts: I would like to ask you, Mr. Kennedy, if you have any trouble with the smoke from the kilns when you take this heat for the dryer?

Mr. Kennedy: The dampers, as I explained awhile ago, are in these pipes and are arranged so that you can regulate the draft at your will. The smoke does not effect the color of the brick any, although only a small portion of it can get through the dryer. Of course, the men after going into the dryer come out with their faces and hands all black.

J. W. Hinkley, Green Bay, Wis.

Mr. Storm: I would like to ask Mr. Kennedy if he has ever used a car with a jack and using one car instead of a number of cars, such as the manufacturers have been telling us about?

Mr. Zimball: I have used that patent car for a season now. We handle the brick in this way as cheaply as far as the yard as to the dryer, with the exception of the covering up we have to do. We have an open yard drying system. We have tried it in a shed but it takes too long to dry.

Mr. Potts: Do you use a dryer?

Mr. Zimball: We do late in the fall. We do not expect to use it in the summer time as long as it is drying weather. I remember at the last convention Mr. Vogt had a paper, and he recommended a system of this kind entirely against the proposition of Mr. Kennedy. That puts us at a loss to know which proposition to accept.

Mr. Stoll: I can see where a discrimination would be in any kind of a dryer with that system, for the reason that Mr. Kennedy has a very tender kind of clay. It takes him 72 hours to dry his clay. Mr. Kennedy's system is that one car follows another down the dryer until they get to the hot end.

Mr. Finnegan: This system that Mr. Zimball is using is the Portable Hake?

Mr. Zimball: I might call it a Portable Hake system, but with the latter you do not use the racks at all. You load the brick on the car and have a truck like anything else and not use the track. These elevated cars that we have run on a track the same as you do on the dryer system.

Mr. Potts: I would like to ask if there is any gentleman here who has used the dryer, or the waste heat from the kilns for their dryer and where they have been making red brick, if there was any discoloration in the surfaces of the brick?

President Wilson: The question of discoloration is a point which I do not just grasp. Do I understand that Mr. Potts asked the question if there was any discoloration by the use of waste heat?

Mr. Potts: Yes.

President Wilson: I would say, Mr. Potts, that there is no discoloration by the use of waste heat when you use it after you stop firing the kilns. In our system we do not hook on to a kiln until after we have stopped firing. Of course, once or twice—possibly two or three times—since we started our dryer, we got caught for hot air and we hooked on to a kiln before we got through firing and we did not get the best results from it; that is, the gases from the fuel got into the dryer and discolored the bricks before they were really burned. They did not affect them any but when they came out of the kilns, instead of being clean brick they were discolored.

Mr. Potts: Do you use coal or wood?

President Wilson: Both. I would like to ask Mr. Pratt of the Excelsior yard, of the city, if he has any experience along these lines.

Mr. Pratt: Our dryer is a steam dryer.

Mr. Kennedy: I hope that this question won't end here. There a whole lot of questions before us and I am sure that there are many of us here who have had experiences and ideas along these lines, and this is the time to let us hear them. If they have been bumped a little bit let us hear from them. I would ask Mr. Pratt to give us an idea of his steam dryer. It may be of some interest to us.

Mr. Pratt: My experience with steam dryers, or any other dryers, or hot air dryers, or to use them both, is to always see that you have a free circulation. You have to keep the cool end of your dryer hot enough to keep the brick from dewing. Sometimes you find the fan is taking the air out too fast, so fast that it leaves a moisture in the brick like dew, but when you get about 150 degrees in your steam at the hot end and 100 degrees at the cool end you always find it to work better, if the clay will stand that heat. Get about 50 degrees between both ends and get a hot air circulation just as if you had a hot wind.

Mr. Ringle: Mr. Kennedy would like to hear from someone who has had experience drying brick with a dryer. At Wausau we have a steam dryer and when we bought it we were told that that dryer would dry any kind of clay in forty-eight hours. The dryer was put in and the man there said that it was in good shape and to go right ahead and make brick. We went ahead but found that we could not dry any brick successfully with that dryer. There was a very large percentage of loss on account of cracked brick. They said there was too much ventilation—too much draft—the brick were drying too fast, and all those things. We experimented with that for nearly a year. We finally come to the conclusion that it was cheaper to prepare our clay —mix it to the proper proportion so that it would stand that heat and dry it in the time that we wanted to dry it. We are now careful not to have our clay too fat or too lean and mix it in proper proportions. In this way we can dry our brick in from 36 to 48 hours without any trouble, and the only trouble is when we accidentally get a poor batch of clay. We find it is much cheaper to regulate the clay than to regulate the dryer.

Mr. Kennedy: Does the clay keep the moisture when it is too fat or when it is too lean?

Mr. Ringle: When it is too fat. We have tried it with fat clay and find it takes as much as 72 hours. That does not give any satisfaction. It takes a long time. We found that the fat clay would not stand that fast drying so we mixed our clay to the proper proportion.

Mr. Kennedy: How much did your brick shrink from the time of leaving the molds until they left the dryer?

Mr. Ringle: About three quarters of an inch.

President Wilson: I do not think, Mr. Kennedy, that you take the amount of moisture that is in a brick after it leaves the machine into consideration. There is a vast amount of water removed in the process of drying.

Mr. Kennedy: Mr. President, have we left the impression on the mind of this convention that the dryer is not a profitable thing? Maybe the machine men feel that we have stepped on them. I do not feel like that. The man that made the dryer to dry those brick will dry them, but the man that is sent out on the road to sell that dryer is no more fit to tell me how much heat and how much air is required to dry them than anyone. He cannot tell me how many units of water there is in a brick without experimenting. There is this much about a dryer. If it is properly handled—and I think I can say it without being contradicted here—you can get your brick thoroughly dry, burn less fuel, have less flashed on your brick, keep a better lot of men, start earlier and run later in the season than you can without a dryer. You can depend on your output and know how many brick you are going to turn out.

President Wilson: I presume it will be in order to make some mention of what the Menomonie Hydraulic-Press Brick Company is doing, but inasmuch as I hope to have the pleasure of having all of you visit our plant in the morning, I do not believe any statements are necessary at this time. We will have our dryer in operation and it speaks for itself. You can see more in a minute what it is doing than I can tell you in an hour. I have a little explanation to make regarding the next number on the program. On account of an apparent misunderstanding between Prof. Birge and the program committee, which was not discovered until to-day, his paper has not been prepared, and under these circumstances we will be unable to present it. I wish to say, however, that our friend, Mr. Covey, has kindly consented to give us a talk on concrete in place of this paper.

Mr. Covey: I think the gentlemen have heard me sufficiently on the matter of concrete. I had nothing prepared and this was fired at me unexpectedly. I do not want you to think that I am an exponent of concrete; I think I am not. My paper advertises their machines among other things and do it mostly in one particular number each month. We are not running a concrete paper. We advertise their machines. We are hardly advertising their product. The "Improvement Bulletin" is a journal devoted to manufactures, such as brick, etc. In the concrete case, we are advertising the machines that make the product. We have not been able to advertise their product. None of them have put them on the market. We know they are getting out a fair product and we are advertising their machines. I was asked to do this partly to fill in this little hole in the program and hope you will excuse me for what I have said.

President Wilson: The next number on the program will be a paper by Mr. Harry de Joannis, editor of "Brick," on "What Constitutes a Modern Brick Plant."

WHAT CONSTITUTES A MODERN BRICK PLANT.

By Harry de Joannis, Chicago, Ill.

Mr. President and Gentlemen of the Convention:

The requirements of the modern brick plant are co-ordinate with the character of its product and its capacity. It would be impossible to lay down a series of rules to which all plants should conform, and anything that can be said on the subject should be rather presented in the general sense than in a particular sense.

The chief requirement for a modern brick plant is a visible and capable head, up-to-date machinery, fireproof buildings, excellent and abundant clay, and good market for the products made from it, are all in danger unless at the head of the enterprise is a man who, as stockholder in the company or as actual proprietor, shall give to the plant a large share of intelligent attention. Pitiable, indeed, is the condition of any enterprise whose interests are placed in the hands of an employe only. Not that the employe or superintendent is incompetent, but, not having a personal or vested interest in the enterprise he lacks the one quality which is most needed. Such a head should have a capacity larger than the plant, in the same way as every part of a plant's equipment should exceed in capacity and strength the demands to be made on it.

In reviewing briefly the physical, mechanical and commercial requirements of a modern plant, it is to be assumed:

FIRST—That the choice of the clay has been made wisely.

SECOND—That the raw material is excellently adapted for the manufacture of the product which the plant is designed to produce, and preferably such clay deposit should be of a character as to fit it for the manufacture of kindred clay products which might be demanded subsequently by the needs of a growing market and for the successful industrial extension of the enterprise.

THIRD—The clay deposit should be extensive, and capable of supplying the plant with a uniform material for a given number of years, which will guarantee under general market conditions a reimbursement of the capital expended and a satisfactory profit throughout all these years to the investors.

Such clay being at hand, adequate facilities are next essential, and the plant itself should be within easy reach of the market for its products. I refer, of course, to the building brick plant, which naturally offers the most restricted market from a shipping point of view. Face brick, paving brick, sewer brick, fire brick and glazed brick are capable of being shipped to greater distances, distances commensurate with their quality. Other essentials are good water and coal. The water should be plentiful and comparatively pure, to prevent scale in the boiler and efflorescence in the finished product, the latter deficiency being the most injurious to the commercial future of the enterprise. The fuel should be procurable at a limited cost, within a reasonable distance and a reasonable prompt delivery. To the brickmaker, the fuel represents more than half of his manufacturing cost.

H. D. Joannis, Chicago, Ill.

Add to these essentials the requirements of a steady and growing market, without which the plant has no reason for existence, and we are able then to glance at the essentials of the plant construction in order that the product may be produced at the lowest possible cost. The judicial selection of the location of the different parts of the plant is very important. Every advantage should be taken of gravity in the successive stages of the manufacture of the brick from the clay pit to the railroad cars. Furthermore, the plant should never be constructed with a view to fulfilling merely the immediate requirements of its initial capacity. Many plants are to be seen throughout the country which bear witness to a deplorable lack of foresight in their initial construction. A plant is built for a 30,000 daily capacity; it is well managed; the business prospers; its market increases, and subsequent additions are made under pressure of a growing business, regardless of future expansion and with no thought, or little thought, of the preservation of the unity of the plant's manufacturing processes. A kiln is added here and a dryer there; an extra machine is installed in one position and a second in another, and in the course of years the plant becomes a heterogeneous operative aggregate without intelligent formation and devoid of economical function. I have in mind such plants, where the losses in operation at the present time are very great, and whose success in maintaining the right of existence depends only upon the excellence of their products, their profits being cut in half by the lack of uniformity and development. When the subject referred to the proprietors they admit that things might be better, but out that a reconstruction on economical lines is impossible because of the enormous cost involved and the delays which would be occasioned by such reconstructive work. It is far better when the plant is young and can be easily molded, that expert advice should be taken and plans drawn by which a steady increase of business can be taken care of without the disturbance of a single element in existing conditions. Plans cost but little, comparatively, to draw up, but additions without plans are expensive experiments.

The modern brick plant should perform all its operations at the least possible cost consistent with its capacity. The pick and shovel and the cart and horse should often be superceded by a steam shovel and an industrial track system years before they are. Many manufacturers allow a decade to go by without discovering when they have stepped over the line of economical mining of their clay. The clay bank is worked farther from the plant each year, and the character of the clay varies, and still the old time methods are pursued and it is considered a small matter to add a man and a horse—simpler, indeed, than figuring out the additional cost entailed in the mining of the raw material and comparing it with the cost to install and operate a steam shovel.

Many plants could be benefitted by the erection of a storage shed for clay which would render them independent of wet weather conditions. By a storage shed, I do not mean the apology of one that is often seen,—a leaky roof supported on drunken posts, nd covering only enough raw material for three or four day's run. It should be a real shed, protected from atmospheric conditions from all sides, and containing enough clay to run the plant for a month at least and longer where the market demands are excessively large.

Samuel Weidman, Madison, Wis.

While talking about shed construction, a few words on the character of the construction of a plant's buildings can not be amiss. These should be of brick or hollow block, and practically fireproof throughout. Such construction is more costly to the tune of five or six thousand dollars, perhaps, but a modern plant is built to stay. The business is intended to develop, and profit is desired not only during the first ten years, but during the remaining forty, if fifty be taken as the life of the clayworking plant and its clay bed. Frame buildings are costly to keep in repair. The frost and the sun cause them to deteriorate rapidly, and their inflammable nature is not questioned. A spark on a frame building is sufficient to commence a work of devastation which will wipe out in an hour the result of years of toil, ruining machinery which is expensive and takes time to replace, and delaying the resumption of operations to such an extent that the business lost becomes fresh business to regain. Once a man gets out of the way of paying you money, you pay dearly to get him back. I would emphasize, as an essential of modern brick plant construction, fireproof buildings. If the buildings are already of frame, reconstructive work on a fireproof basis can be and should be undertaken steadily without delay in any appreciable measure the plant's manufacturing operations. The safest insurance is an investment of this character.

The boiler-and-engine-room should be shut off from the rest of the plant to prevent the entrance of dust and grit, and should be the cleanest place in the factory. An essential adjunct to the boiler-room is a feed water-heater. The boilers and steam pipes should be covered, to prevent radiation, and no steam-saving device should be considered of too small importance to receive your attention. A heater prolongs the life of a boiler and increases its steaming efficiency. I would strongly advise the installation of mechanical stoking devices in the boiler-room. These have now got beyond the experimental stage and the smokeless boiler stack is no longer a possibility, an ideal to be attained, but an accomplished fact. The saving of from 25 to 35 per cent. of fuel is not to be disregarded by any sensible business man. Especially would such a device be valuable where the drying of brick is accomplished by the drawing of waste gases from beneath the boiler into the dryer, or when they are tapped from the base of the stack for the same purpose. Expensive? Nothing good can be bought for nothing. You say you cannot afford it. That is a different proposition. But that is where planning is necessary. Once you are convinced that any apparatus would be an advantageous installation on your plant, set aside a definite sum at intervals until it can be affected. In these days of strenuous competition, the smallest saving should receive your greatest attention. As regards the machine-room proper, speaking Biblically, I would say, "Let there be light." Too often machine-rooms on clayworking plants are in a state of Cimmerian gloom. True, windows have been provided, but they are of bath room size and are never cleaned, and if there is a piece of lumber laying around the window is considered the right place to lean it up against. Plenty of light is conducive to alert, intelligent operation. Obscurity stultifies the operative sense and tends towards sluggish physical movements. As regards the machinery beyond saying that the best is none too good, it is not for me to say anything. Every machine is supposed to be like Caesar's wife, "above suspicion," and I have too many friends among machine men to endeavor to establish comparisons. Before leaving the machine-room, I would make one point, however; that the room be provided with a floor, and that this floor be kept clean. Some machine rooms have the appearance of a scrap heap, above which the machine belches forth a column of clay, the division of which into bricks and their safe transportation to the dryer is a perpetual miracle, the whole plant being like the rocky road to Dublin! Broken brick, slabs of clay, parts of discarded dryer cars, loose wheels and gears litter the floor in every direction and in graceless confusion, and the employes' work is largely in accordance with the machine-room atmosphere.

The modern dryer should also be fireproof and of substantial construction. Its tracks should be solidly bedded and its doors permit of easy ingress and egress for the dryer cars. The operation of the dryer should be superintended intelligently, the co-operative use of thermometers and hydrometers being desirable, so that the work being done in the dryer can be guaged at all times. I am convinced that little is attempted in the way of reducing the cost of dryer operation by a study of dryer conditions.

As to the kilns, these should have substantial foundations, provided with adequate drainage facilities. Their construction depends largely upon the character of the wares desired and the uniformity of the product hangs on the intelligence of the burner. No matter what type of kiln is used, the essentials are a good draft, uniform fuel, grate efficiency, regular firing and furnaces so constructed that provision can be made for the mixing of the requisite amount of air with the volatile gases. It would be better if all of the kilns of the plant were covered in, so that the kilns and the coal which will be burned in them shall be protected from weather conditions. In all additions and improvements made, expert engineering advice should be sought and bought and plans should be drawn and carefully scrutinized before any work is undertaken.

The modern plant should have its operative area paved, even if such paving is done with bats of the plant, so that workmen can get to any part of the plant with ease, independent of weather conditions and changes. Water courses should be provided to carry away the water during the rainy seasons. Last, but not least, every plant should have a carefully kept-up cost system, by which the cost of every stage of manufacture of the product can be ascertained at any time and extravagances in any given direction may be done away with. It may be adduced that the keeping up of any cost system involves additional work, and that it is difficult to get the hands to fall in with such new ideas, but times are changing and the old slipshod methods must disappear. The brickmaking business is a business proposition; guess work must be eliminated, and no plant can be run today successfully without the same care being given to it in this regard as is given to operative costs in the other leading industries of the country. (Applause.)

Discussion.

Mr. Potts: I cannot add very much to Mr. Joannis' paper, but I would like to help Mr. Joannis to impress upon every brickmaker that there cannot be too much care in the steam equipment, erection of buildings, machinery, setting up a clayworking plant. Concrete foundations are essentials in buildings, and concrete supports for the shafting will be found of little more expense than lumber. In this way your steam gear will never get out of line or out of level. Keeping up a cost system is also of vital importance. It is very necessary for every brickmaker to know just what his brick cost him in the manufacture.

Mr. Frazer: Mr. President, I do not believe I can add anything material to that paper. From my standpoint, I can only say what Mr. Potts has said. And, if the brickmakers throughout the country would read that paper carefully it would help them. It may be overdrawn a little where the small brickmakers are concerned. In the construction of a plant it is certainly better to spend a little more money in the beginnning than to have to spend a great deal afterwards.

President Wilson: I would say, gentlemen, that Mr. Joannis has covered the ground very thoroughly, indeed, and inasmuch as we have one new member who has been kind enough to come to our convention and who is contemplating building a plant, I trust he has found something in this paper that will help him. We would like to hear from him.

Mr. Crabtree: I do not know that I can say much, that I can say anything, but I will say this much. I came here a tenderfoot. I did not know anything about the business and I don't know much yet, but I have met, gentlemen. a very nice class of men, indeed, and as I knew nothing about the men interested in the clay manufacturing business before, I am very pleasantly surprised. They seem free to tell anyone all they know about their business. In other lines of business it is very hard to get any information. Generally when you go to a man and ask him about his business and intimate that you may be a possible competitor of his, he will generally shut up like a clam, but I do not find the same case here, and while I intend to go into the business in the near future, I won't know much about it until I have had experience, as I have learned from these gentlemen that have paid for their experiences, but I do say that I have obtained a great deal of information from these proceedings and from what I expect to see around town here. It will help me vastly and I hope it will be possible for me to attend your conventions always. We cannot make any too many friends. The more men we meet; the more we go out, and the more willing we are to impart imformation to one another, we are that much ahead, and it is not very expensive. I want to thank these gentlemen here who have volunteered their information to me when I have asked for it to-day, and I think I shall bear down a little harder tomorrow. I have been helped a great deal by these discussions—especially the papers that have been read. I have got a whole lot out of it and if it ever comes my turn to help out when I have learned more, I shall be willing to give anyone what they can get out of me. I thank you for your attention. (Applause.)

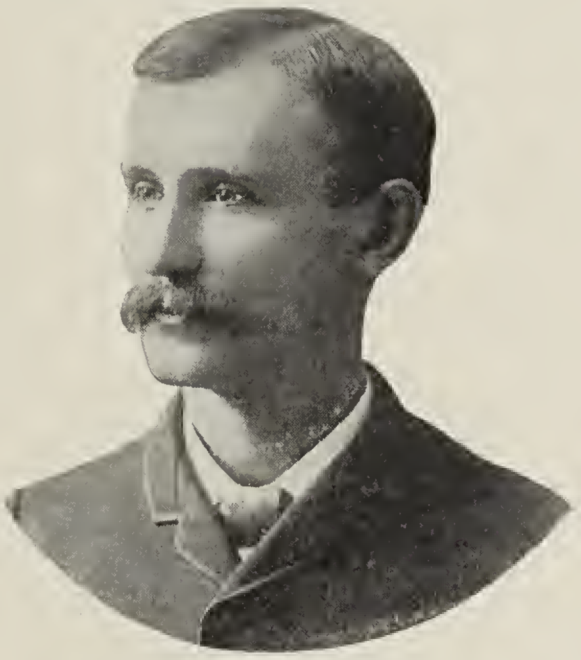
Mr. Kennedy: There is one thing that Mr. Joannis has taken up in his paper and that is the itemized cost of each branch of the business. There is too little attention paid to that. We find it every day. A man should know just what each branch of business costs him per thousand of brick in order to intelligently place a fair valuation on his product. In reading "Brick," I notice this question was taken up very extensively by the Convention of National Brick Manufacturers' Association. This itemized cost must be kept up every day. If you let it go by for a week, it is a hard job to pick it up again. If you have no time to do it yourself, hire a bookkeeper to do it for you,—most of us employ bookeepers anyway—and make him do it. When you get the bills for material bought for any specific purpose, find out what the material the bill covers is for, and place the amount against that item, so that at the end of the season you will know just exactly what that item has cost you during the season. Then by taking your output you can find just what expense per thousand for that item has cost you. In this way you can find out just what it costs you to burn each kiln of brick—how much for coal and how much wood and how much for the labor. The trouble today is that when a job is in sight and the contractor comes to you and asks for a price on brick, you give it to him; but he says he can buy the brick a little cheaper from the other fellow. Well, you say if he can sell them for that, I can too and that you can make brick just as cheap as he can. But, do you know how much it costs you to make brick? You meet the man's price, but you do not know whether you have made any money on the brick or not. It might be that you are selling them below what they cost you and consequently your bills are not paid every thirty days.

Mr. Crabtree: There is one thing that I have heard more or less about and that is where a tender clay is used that causes the brick to crack in the drying, if by using sand it reduces that difficulty. I do not gather anything of this kind today, and I would like to know about it.

Mr. Kennedy: Yes, we use sand.

Mr. Crabtree: What proportion do you use?

Mr. Kennedy: That is guaged by the clay you are using. If the clay is very fat, you use more sand; you determine that by the way your brick slip from the molds, and by the knowledge you have of the clay when it is prepared before it goes into the molds.



Albert Potts, Indianapolis, Ind.

Mr. Crabtree: What kind of sand do you use?

Mr. Kennedy: Bank sand. I would prefer lake sand.

Mr. Crabtree: Is the sand sifted in any way?

Mr. Kennedy: If there are any stones or pebbles in it it certainly must be sifted or screened.

Mr. Stoll: Regarding that last question: We do a great deal of testing of clays at our factory. I kept a memorandum of one test that we made for a man in Dubuque, Iowa. They had a very strong clay, which cracked very badly in the drying after being made into bricks. They had to keep their brick in closed sheds for four weeks before they would be dry. They did their drying in sheds but they had to keep their doors down and kept them there for four weeks. They wanted a dryer, but we would not recommend a dryer to them, so they sent some clay to us. We first tried one pound of sand for every five pound brick and the the next morning, carrying only 90 degrees the brick would crack, and when we put in 5 per cent. of sand they would still crack. We then put in 10 per cent. of sand and they still cracked. We then tried 15 per cent. and when we got to 20 per cent. we could dry them in 24 hours. It all depends upon what kind of clay you are using.

Mr.. Crabtree: In using 10 per cent. or 15 per cent. of sand is it perceptible in the brick?

Mr. Stoll: No, you would not notice it.

Mr. Finnegan: We have about one-fourth shrinkage in our brick by using sand.

Mr. Crabtree: In using additional sand to prevent the brick from cracking in the dryer, does this cause the brick to dry quicker than it would without the sand?

Mr. Finnegan: In our experience by using the sand, the brick dry a little slower, if any thing. We dry our brick in sheds on pallets, and we find by using sand they dry a little slower, but they dry better.

President Wilson: On account of the shortness of the program this afternoon and having quite a program tomorrow afternoon, I think it would be very much better to take up the second number of tomorrow afternoon's program at this time. Mr. Sanborn, who was to present this paper on "How to Overcome the Difficulties that Arise in the Manufacture of Brick," is not present with us but he has sent in a written paper, which I will ask Mr. Joannis to read for us.

HOW TO OVERCOME THE DIFFICULTIES THAT ARISE IN THE MANUFACTURE OF BRICK.

By F. L. Sanborn, Portage, Wis.

Mr. President and Gentlemen of the Convention:—

There are plenty of men here who have had more experience with different clays, and are better fitted to write on this subject than the writer is, as I suggested to our Secretary when asked to write on this subject, that this should be given to one who has had a wider experience in the manufacture of brick than we have had. We have had only one kind of clay to deal with during the time that we have been manufacturing brick so our experience is not at all varied.

F. L. Sanborn, Portage, Wis.

From the time that the Hebrews, under Pharaoh's taskmasters, were compelled to gather straw for their tale of brick until the present time, there have been difficulties to overcome in the manufacture of brick; although we do not have the straw problem to deal with as did the ancient Hebrews, yet every brick manufacturer will be witness to the fact that there are problems to be solved in the successful manufacture of brick even in the beginning of the twentieth century. In our own State there are such a varieties of clays which must be handled differently in the manufacture as well as in the burning, to produce a product that will stand the test that is required at the present day.

Until we learn from experience as to the nature of the clay that we are handling, we are unable to get the best results, and in fact often sustain heavy losses from our ignorance as to the proper method of handling it in the manufacture, as well as in the burning of it.

Our clay is of a yellowish gray color; our bank is about 16 feet high and interstratified clay and sand in about the right proportions, so that all our material comes from the same bank, which we find to be of quite an advantage.

Our clay containing a large percentage of silica it requires a very high degree of heat to burn it properly, requiring five or six days to burn it after the watersmoke is off.

When we first began the manufacture of brick we had a large proportion of soft brick. At first we burned in a scoved kiln, using wood entirely as fuel, settling our center first and then burning the heads. The consequence was that we often found the heat drawing to the center so that we could not settle the heads properly. To overcome this trouble we adopted the plan of burning the heads first, that is, as soon as the kiln was dry, we closed one side and burned that head for twenty-four hours, then changed to the other head for the same length of time, continuing this until the heads were sufficiently down, that is, changing at the end of twenty-four hours. In this way we have been able to get the heads down properly, and almost invariably the center was low enough when the heads were down, so we did not need to spend any more time and money in settling the middle.

In order to increase the proportion of hard brick, we built permanent walls for our kilns twenty inches thick at the bottom and twelve inches thick at the top. We also put in grates and burned coal in the mouth of the arches. This we found not only increased the percentage of hard burnt brick but it very materially improved the quality of the arch brick, so that we could ship a very large proportion of them where heretofore only a small part of those brick were good, merchantable brick.

For several years after we began the manufacture of brick we dumped them on the yard to dry. During this time our losses were quite heavy from cracked brick, as well as from storms which spoiled them before they were dry enough to put in the hack. To overcome this loss we adopted the shed and pallet system, which proved to be a great saving in this direction.

Of late we have been throwing lumps of coal into the center of our kilns with the slides which we have found gives good results when the kiln is ready for a settling heat.

The great cost in burning Wisconsin clays in comparison with those found in other States about us is of course detrimental to the interests of Wisconsin manufacturers, as we are obliged to compete with brick outside the State that can be burned at a very much smaller cost. Especially is this true of Chicago brick which are being shipped into this State on a low rate of freight in addition to the small cost of burning. This is one of the obstacles that we are up against that it seems very hard to overcome. The matter of distance does not seem to cut much figure with their prices. They offer to furnish their brick at a station 221 miles from Chicago at the same price they charge for them 166 miles from Chicago.

A Wisconsin brick manufacturer who was figuring on a job at a point in Juneau County was told by the contractor that it did not make any difference how low a price he named, he could get the Chicago brick for five cents per thousand less.

Whether our rate commission will be able to do anything for our relief remains to be seen. I have no doubt but what some action will be taken by this Association at this meeting to bring this matter to the attention of the Rate Commission so that we may know in the near future whether or not they will be able to do anything for our relief. To meet this competition the brickmakers of Wisconsin must adopt any new methods that will decrease the cost of manufacture and improve the quality of their product.

It seems to us that if the brick manufacturers of Wisconsin would stand together and refuse to furnish face brick to be used in connection with the Chicago brick, that the demand for Chicago brick in this State would be very much less than at the present time. (Applause.)

Discussion.

Question by Member: Cannot the addition of a large amount of silica reduce the cost of burning?

Member: Mr. Sanborn's paper says not.

President Wilson: I would ask Mr. Lowater of Spring Valley what his experiences along these lines are.

Mr. Lowater: We have two distinct kinds of clays—a very tough clay on top and a silica underneath. If we do not mix them properly we have trouble.

President Wilson: Mr. Meier, have you anything to offer along these lines?

Mr. Meier: No, sir, I have not.

President Wilson: We want to have every member that has anything to offer for the benefit of the meeting generally to give us an opportunity to hear them.

Mr. Finnegan: All of the brick that are shipped from out of Wisconsin to points in our territory are common brick and have to be faced with good Wisconsin bricks. Now if we would all get together and refuse to cover any Chicago brick, I believe in this way we could keep out the Chicago brick. We have a general weakness and that is to do business. Most of us have to sell our brick when we can and there is some excuse for us and we are obliged to take our medicine on account of the rates. The same thing applied to sand-lime brick shipped in from Michigan. If we simply stick together in this matter and when a contractor comes to us for face brick, ask him "What are you going to lay on the inside?" and if he tells you it is Chicago brick or sand-lime brick, tell him that you are out of the the face brick market. I think in this way we could sell all of our product, provided all the brickmakers in this State would do the same thing.

Mr. Kennedy: I think we need not lose any sleep on this phase of the question. Right here in Menomonie you have an example of it. You would not consider for one moment that you would be able to ship your brick all over the country if it were not to face some one else's brick.

Mr. Stoll: There was a matter that came up this morning. In the President's report he made some mention of the fact that the Secretary had a whole lot of trouble in getting the members of the Convention to write papers. Now, that is all wrong. I was Secretary of the Illinois Association for a long time. I had the same trouble but it should not be. What you want in an Association are discussions. If you people are called upon to write an article write it. Start some discussion. That is the way to do it.

Mr. Ringle: There has been some discussion this morning with reference to mixing sand and other material in the clay. We have used brickbats and ground them up and find them equal to sand or anything else. All you have to do is to get a little machine, grind your bats, and it serves the same purpose as the best kind of sand, shale or other material.

President Wilson: It is now getting along toward the time when most of us may want to go up and clean up and wash our necks on the inside, especially since the time for reassembling for the Bauquet is placed at 6:30. The commercial Club of Menomonie extends to all of the members of the Wisconsin Clayworkers' Association a hearty invitation to partake of this Banquet. I wish also, gentlemen, in this connection, to extend the same invitation to the exhibit held by the Women's Club of this City—the arts and crafts exhibit—which is being held just one block from here at the Mabel Tainter Memorial. This represents an exhibit of Menomonie industries. I hardly know now when we shall have an opportunity to visit this exhibit, but I hope we may be able to figure out some time tomorrow for fifteen or twenty minutes to visit this place because they have a great many interesting things to see. There is another thing which I wish to speak of and that is the registration of our visitors who are not members of this Association. We have a few visitors who do not care to become members who live outside the State, but we desire to have them register on the list and they will be marked "Not members," instead of "Members." Now, the trip up in the morning to the local yards is scheduled to leave the hotel at 8:30 in the morning. This has been somewhat revised and it has been arranged to visit the local yards by a train instead of wagons or sleighs, which was originally planned. It will be somewhat difficult for us to get the train to come to the hotel, and I will ask the members to walk from the hotel to the depot which I hope most of you will be able to do in the morning, and the train will leave the depot about 8:30, I should say. I believe the arrangement is to visit Mr. Phillip's yard first and then the Excelsior Yard, after which we will visit the Hydraulic plant, and we can spend as much time as the members desire at all of these places. After we get there the train will leave us and will come back after us at 12 o'clock. In case we get through before 12 o'clock it has been suggested that the train switch us in to the Globe Iron Works for a visit to that place. This can be arranged according to the time we get out to the factory tomorrow morning.

On motion the convention adjourned until Friday afternoon.

THIRD SESSION.

Saturday Afternoon, March 10th, 1906.

President Wilson: Before taking up the program for the afternoon, I believe it is in order to announce the committee which is to report recommendations for the selection of a place for meeting next year and also the names for the new officers for the coming year. I have appointed for this committee, Mr. Ringle, Mr. Gunther and Mr. Meier.

Mr. Weidman: I would like to announce that as a resident of Madison, Madison will extend an invitation to the Clayworkers' Association to meet at that place next year. As you know, we have a great many things of interest there. In extending this invitation, I would like to have the Committee understand that they will have to set aside their general rule of selecting a President who lives in the town at which they decide the next meeting shall be. I would also call attention to the fact that the Legislature meets in Madison next winter.

Mr. T. A. Randall: I should not think it would be the best thing to meet when the Legislature meets, because all the hotels will be filled and it might be some trouble to find lodging for all of the members of the Convention under these circumstances. This Committee should take this fact into consideration in their recommendations.

Prof. Heinrich Ries, Ithaca, N. Y.

President Wilson: This matter the Committee can take into consideration in making their recommendations. The first number on the program is the subject of "The Test of Wisconsin Bricks," by Prof. Ries of Cornell University, which Mr. Weidman has been kind enough to present for him.

THE TEST OF WISCONSIN BRICK.

By Prof. Heinrich Ries, Ithaca, N. Y.

In my paper presented to the Wisconsin Brick Manufacturers' Association last year I stated that a number of tests were being made on the bricks from the different factories in Wisconsin and expressed the hope of being able to present in more detail the results of these tests at the next meeting. Since then these tests have been completed and have been productive of a number of exceedingly interesting results.

In order to test the qualities of the bricks made in Wisconsin, a number of samples were collected from different localities, ninety-one in all. Ten bricks were collected from each locality, normally burned ones being selected as far as possible, either from the kiln or in the stock pile. In a few instances under-burned or hard-burned bricks were taken in addition to the normally burned ones.

The samples thus selected were shipped to the University of Wisconsin at Madison, and tested in the Engineering Laboratory by Messrs. C. V. Hopper and L. F. VanHagen.

Each set of bricks was tested for (1) its crushing strength; (2) its transverse strength, and (3) its absorption. In every case five bricks were crushed in order to give a reliable average, and the results are given in detail in the accompanying charts.

EXPLANATION OF TESTS.

Crushing tests: This test was made for the purpose of determining the number of pounds pressure per square inch that the brick will stand without crushing. The strength will naturally vary with the density of the brick, degree of hardness to which it has been burned, character of the raw material, and amount of care taken in the manufacture.

Few bricks show a crushing strength of less than 2000 pounds per square inch, while some even exceed 15,000 pounds per square inch, but none of the Wisconsin brick reached the higher limit and few fell below the lower one. As a matter of fact, however, bricks when set in a wall are seldom compelled to stand the weight they are capable of resisting.

The test to determine a brick's crushing strength is commonly made in a specially constructed machine. Half bricks are usually tested, because a whole brick has so large a surface area that it sometimes resists a greater load than the machine is capable of supplying. Before crushing the two opposite surfaces of the brick (in this case the top and bottom) must either be ground perfectly smooth and parallel, or else they must be built up to this condition by the application of a layer of plaster of paris. The reason for this is that in the testing machine the brick is set between two steel surfaces, unless its surface fits perfectly against these, the pressure will not be evenly distributed.

Before crushing, the area of the brick's surface is measured, and the total load necessary to crush the brick, divided by this area, gives the crushing strength in pounds per square inch.

Transverse Strength: This is more important than even the crushing strength, for while a brick is rarely loaded to its crushing limit, it is sometimes exposed to its limit of elasticity and cracked.

In the cross breaking test a whole brick was placed on two rounded knife-edge bearings six inches apart. Pressure was then applied by a third edge from above, until the brick broke in two and the number of pounds pressure at which this occurred noted. It is evident that in two bricks of exactly the same degree of strength the amount of pressure necessary to break them will depend upon the distance between the supports and the cross section of the brick. The farther apart the supports, the less pressure necessary. Since this is so, it is necessary that for purposes of comparison all results of the breaking strength shall be reduced to some uniform expression, which shall take account of the differences of length, width and thickness of the brick. The most accurate expression is that termed the *modulus of rupture*, which is calculated from the following formula:

$$R = \frac{3\,Wl}{2\,bh}$$

In which R = Modulus of Rupture.
W = Pressure necessary to break the brick.
l = Distance between the supporting knife edges.
b = Breadth of the brick.
h = Thickness of the brick.

This means that three times the pressure in pounds multiplied by the distance between the supports, is divided by twice the breadth of the brick multiplied by the square of the thickness. If the pressure necessary to break a brick was 1,500 lbs.; distance between the supports, six inches; width of brick, four inches and thickness, two inches, the modulus of rupture would be calculated as follows:

$$\frac{3 \times 1500 \times 6}{2 \times 4 \times 2^2} = 834.7 \text{ pounds.}$$

Absorption test: An absorption test is made for determining how much water a brick is capable of absorbing. This indicates approximately the degree of porosity which it possesses. Vitrified brick are impervious or nearly so, will absorb little or no water, while many common bricks will absorb 15 or 20 per cent., and some of the Wisconsin ones absorbed over 30 per cent. It is easily understood that if a brick of high porosity is exposed to a freezing temperature when its pores are filled with water, the expansion of the latter, when changing to ice, *may* be sufficient to disrupt the brick, either after one freezing, or after repeated freezings following periods of thawing. A moderate or low temperature is therefore desirable.

The absorption test is usually made by carefully drying the brick, then weighing and soaking them for 48 hours in water, and weighing again, the increase in weight showing the amount of water absorbed. The percentage of absorption is calculated in terms of the original in dry weight.

Objections have been urged by some to this method of determining the absorptive power of a brick, it being claimed that the pores of a brick do not become completely filled with water, and that a better way is to place the brick in a vacuum while it is immersed. In making absorption tests we should not forget that we are trying to duplicate as nearly as possible the conditions to which the brick will be exposed when in actual use. Under such conditions a brick is not exposed to vacuum, but absorbs moisture while exposed to ordinary atmospheric pressure, and consequently by the vacuum method we are forcing the brick to absorb much more water than it would when in use, and are obtaining results of comparatively little practical value.

The writer does not feel either that the total immersion of the brick is the best way of testing its absorption, but that partial immersion will yield the most satisfactory results. With this last mentioned method the brick is immersed to perhaps two-thirds its depth in water, which allows the liquid to be drawn into the pores by capillarity while the air in the interspaces of the brick can readily escape.

In testing the Wisconsin bricks the absorption by all three methods was tried. Two half bricks were tested for absorption by complete immersion in water for 48 hours. Two other half bricks from the same lot were immersed to half their depth in water. At the end of four hours these were taken out and the gain in weight noted. Those two samples were put back into the water and allowed to remain 44 hours longer, their absorption being again determined. It was found that in nearly every case, the bricks at the end of four hours had absorbed over 90 per cent. of the total quantity they were capable of absorbing. The method of manufacture and degree of density of the brick did not appear to affect the result in any way whatever.

A third pair of half bricks were completely immersed in water under a vacuum, so that all the air could be extracted from the pores and the brick become completely saturated. By this means a greatly increased absorption was obtained. The per cent. gain over the absorption obtained by the first method ranged from about 6 to 60 per cent.

In the accompanying charts the details of the crushing, transverse and absorption tests are given.

DISCUSSION OF TESTS OF BRICK.

Crushing strength: The crushing strength of Wisconsin brick tested ranged from 993 lbs. per square inch up to 7,060 lbs. per square inch. These tests were made upon 91 sets of brick.

The range of strength in the several classes is as follows:

Kind.	Minimum.	Maximum.	Average.
Soft mud	1074	5838	2829
Stiff mud	1304	7060	4244
Dry press	993	5558	3408

This indicates that the average crushing strength of all the stiff mud and dry press bricks made in Wisconsin is higher than the average of the soft mud bricks. Anyone not acquainted with the character of the clays used might perhaps ascribe this to the process rather than the material.

The true explanation seems to the writer to be this: Most of the stiff mud brick manufactured in Wisconsin are made from cream-burning clays. These, in most cases, have to be fired much harder to get a good brick than do the red-burning ones. Consequently the manufacturers of cream bricks fire their product as hard as possible, while the red brick manufacturers knowing that their clays fire easily, do not take the trouble to fire them hard.

Transverse strength: The transverse strength of all kinds of Wisconsin clay brick tested ranged from 157 lbs. to 1027 lbs. Classified by kinds, the range was as follows:

Kind.	Minimum.	Maximum.	Average.
Soft mud	157	1438	575
Stiff mud	1438	1861	1027
Dry press	575	702	512

Here the order is found to be a little different than in the case of crushing strength, the stiff mud brick showing the highest average, following by the soft mud and these by the dry press brick. The same order also applies to the maxima and the minima.

Absorption: The percentage of absorption in the different bricks tested ranged from 5.8 per cent. to 34.30 per cent. Classified by kinds it was as follows:

Kind.	Minimum.	Maximum.	Average.
Soft mud	5.80	28.20	18.60
Stiff mud	27.60	34.30	20.26
Dry press	12.90	33.35	21.47

Here the order is again different. The soft mud brick showing the maximum absorption as well as the lowest average absorption, while the stiff mud showed the maximum and highest average absorption. That of the stiff mud and dry press bricks is so high because they are made from calcareous clays.

CONCLUSIONS DEDUCIBLE FROM THE DIFFERENT TESTS.

1. The stiff mud brick show the highest crushing strength because of the character of the material to which this method of manufacture is usually applied in Wisconsin.

The minimum strength shown by the stiff mud series falls considerably below the maximum crushing strength of either the soft mud or dry press brick tested.

2. There is no direct relation between the crushing and transverse strength, a brick with a high crushing strength showing sometimes either a low or high transverse strength or vice versa. The following figures illustrate this:

Lab. No.	Kind.	Avg. Crushing Strength.	Avg. Modulus of Rupture.
220	Soft mud	1192	526
114	“ “	4572	569
22	“ “	3036	1063
137	“ “	5796	1062
99	Stiff mud	1540	588
128	“ “	2708	550

There are instances, to be sure, in which two bricks of nearly equal crushing strength will show closely similar transverse strengths. Thus:

216	Stiff mud	6230	964
202	“ “	6250	946

Two series of bricks showing different crushing strengths may either show the same transverse strengths, or the one of higher crushing resistance may also show higher transverse strength. Thus:

207	Stiff mud	2234	1097
158	“ “	4996	1090
99	“ “	1540	588
205A	“ “	5110	2190
138	Soft mud	1192	526
114	“ “	4572	569

3. The percentage of absorption is not necessarily an indication of the strength of the brick either crushing or transverse. This is well brought out by the following examples selected from the table of tests:

Lab. No.	Kind	Crushing Strength.	Modulus of Rupture.	Percentage Absorption
216	Stiff mud	6230	964	19.6
205A	“ “	5110	2190	7.6
99	“ “	1540	588	34.30
	Dry press	2704	431	18.75
114	Soft mud	4572	569	14.40
137	“ “	5796	1062	22.25
138	“ “	2398	589	24.65

4. Harder burning will increase both the crushing and transverse strength, thus:

206S	Dry press	993.3	256
206H	“ “	1996.6	469.6
28	Stiff mud	1500	464.2
28A	“ “	4852.5	1311.5

5. An interesting comparison is afforded by Nos. 143 and 90.

143	Stiff mud	4596	749	20.55
90	Dry press	2704	431.8	18.75

Here we have two bricks, made from practically the same clay, but molded by different methods. If the dry press brick were harder burned it would no doubt show up better.

Another example can be selected from a second locality at which cream-burning clays are used.

206H	Dry press	1996.6	469.6	33.35
80	Stiff mud	3380.	1034.	20.55
202	“ “	6250.	946.4	16.6
203	“ “	3452.	893.4	16.3

6. The transverse strength is often, and in fact almost invariably affected by the presence of pebbles, lumps of clay, or cavities, and whenever one of a series tested shows a low transverse break it can in nearly every instance be traced to this cause.

7. The crushing strength is less easily affected by the flaws mentioned above. (Applause.)

Discussion.

Member: How do you account for the variation in the absorption?

Mr. Weidman: I think that is largely due to the kind of clay used—whether cross grained, and the way it is burned as Prof. Ries has explained. These are actual tests made on the bricks. I do not know anything about the facts or their explanation any more than as they are explained in the paper just read.

Member: Now, in that dry press table that you give us there were two samples and the last one, the strongest, has the lesser absorption. Now, according to your paper, if hard burned it would be stronger and absorb less?

Mr. Weidman: That brick may not have been burned hard—as hard as it should have been to reduce the absorption.

Mr. Joannis: It evidently showed a greater crushing strength.

A Member: But without knowing the clays you cannot form a table.

Mr. Weidman: I did not do the work but I think they are principally facts as to the results of the tests and facts brought out which show these variations. The variations, I should think, are more due to the character of the burning than the character of the clay used.

A Member: Would the presence of stone in the clay make any difference in the absorption?

Mr. Weidman: If there was very much lime stone, it would not make any sort of brick at all; it would crack in burning.

President Wilson: The gentlemen of the convention may be interested to know that Mr. Weidman reports that the report of Prof. Ries that has been preparing for some time is at last in the hands of the State Printer and there are some hopes of getting it out in printed form before very much longer. You will agree with me that we have been anxiously waiting for it in such form as it is expected it would be, but Mr. Weidman states that the State has a great deal of work on hand in the way of printing just at the present time.

Mr. Weidman: It seems to me that practical brickmakers ought to be able to discuss this table. I should like to see the dry press brick man discuss it. The modern brick man ought to be able to answer the questions as applied to his brick.

President Wilson: I am inclined to think, Mr. Weidman, when the report comes out, if it shows the name of the Company, the yard and the location—that each individual will discuss the part he is interested in at any rate. They will begin then to realize and figure how to improve upon their own bricks; but on a proposition of this kind I am inclined to think most of them will think they are discussing their neighbor's brick instead of their own. There is certainly great food for thought in the figures presented.

Mr. Crabtree: I would like to ask Mr. Weidman, if it is not likely, in order to have an absolutely sure test, that all of these different tests should have been made from one kind of clay—soft mud, stiff mud and dry press—to tell the relative difference between the different processes. Perhaps one kind of clay would have a great deal more strength in crushing, transverse or absorption than another and when different tests are made on different kinds of clay, if they could get at a very fair comparison at that rate. I think some of you practical brick men can answer that question.

Mr. Weidman: Of course those facts enter into the problem and it was not the object of the tests to make an actual comparison in that way—only to show that there was a variation in the brick and that the variation was due to the fact of the kind of clay, as well as the method of manufacture.

President Wilson: What I was getting at was that I do not think the comparison is of very much utility where you do not know the clay that you have.

Mr. Bailey: I want to know why this test was made. The more pore space the brick has the more water it will absorb and an expansion will be brought about when the water freezes in these pores and every time it freezes the water expands and after a sufficient number of freezings a brick will tend to crumble. Now, in a brick that has a low absorption there will be a small expansion because there will be less water in them and the brick with a high absorption will contain more water and when they freeze they will fall, crumble and break down when exposed to freezing and thaw. I understand that is the general theory, but from practical experience after a long term of years, it has been proven to me that it is not always the porous brick that will stand the most loss. We have a living example of it here in this City. It is only an imperfectly burnt brick that will show the most absorption. This is a very important test and I do not go a great deal on tests. Some clays will stand a great deal more than others.

Mr. Kennedy: This has brought on a discussion that I was not looking for but in picking a brick for facing a wall, I would pick a hard burnt brick for the reason that they won't absorb so much water as the soft burnt brick and consequently won't shell off. If you take a soft burnt brick, it is all right on the inside where it is comparatively dry, but if you put them in a basement or in the wall just above the ground line and it will absorb so much water that in the spring when the spring frosts are on, the brick will shell off, showing that the bricks were soft and that they absorbed too much water and the frost broke them. I think the reason one brick absorbs more water than another is on account of the burning. If a clay is properly mixed and is burned properly, it reaches that stage of hardness where it condenses and if allowed to burn long enough and hard enough, it will become so hard and so compact that it will hold scarcely any water.

President Wilson: That is the fact that Mr. Bailey wants to bring out, but Mr. Bailey might tell us how to burn a kiln of all hard brick.

Mr. Bailey: That is impossible.

Mr. Hamilton: You have not yet replied to Mr. Crabtree's inquiry as to tests. Mr. Crabtree asked Mr. Weidman a little while ago as to the manner of making tests. It would not be practical for the State to take a sample of clay from any one bank and make a stiff mud and a soft mud, and a dry pressed brick out of it just to see which method would make the best brick, but the object, as I understand it, is to take each brickmaker's sample and see what the result of his particular method of manufacture is. You cannot expect the State to go any further than that.

Theo. A. Randall, Indianapolis, Ind.

Mr. Crabtree: What I intended to say I believe in my ignorance I left out. If these tests be made from entirely different clays, would the results be entirely different?

Mr. Weidman: It is very probable that in the stiff mud brick the result would be different if the same clay was manufactured in different yards. These tests, of course, are the tests made on brick from that particular yard, and if the same clays were burned by someone else, they would show different results.

President Wilson: Mr. Crabtree may have possibly overlooked the fact that a great many clays would not work successfully in a dry press.

Mr. Crabtree: I supposed that these tests were made in each individual kind of clay. I suppose that the idea is educational, and to find out whether brick made in a certain manner, would have a commercial value.

Mr. Weidman: Each of the tests is only for the brick that are tested.

Mr. Joannis: The way I understand it is this report is for the stiff mud men and the dry press men, and is for comparative purposes only.

President Wilson: The next number on the program is a paper on "The Benefits of Organization." by Mr. T. A. Randall, Editor "Clay-Worker," Indianapolis, Ind.

THE BENEFITS OF ORGANIZATION.

By T. A. Randall, Indianapolis, Ind.

Mr. President and Gentlemen of the Convention:

The subject upon which I am requested to speak is one of much interest, but is so general in character and covers such a wide range of human endeavor, that the temptation is great to simply deal in glittering generalities which, while pleasing perhaps, is as a rule unprofitable. The benefits of organization are so numerous that to merely mention them is to catalogue the chief agencies of modern progress. We all know and realize in an indefinite way, that modern progress is due to organized effort, but we are prone to credit this to other lines, rather than to the business which we as individuals, are identified. Personally we like to feel that our own work is paramount and that the balance of the world is indebted to us. As a matter of fact, our individual efforts count for little; so little in fact that, as we drop out of life's race from time to time, we are not even missed except by those near and dear to us. Nevertheless, individually, we fondly hug the illusion that we are important factors in the world's affairs.

In speaking of the benefits of organization, it may be said that the very foundation of American trade and commerce is organization. If you will look back upon the work of the present generation of business men, you will see that the principle of organization is so much a part of the woof and warp of every enterprise, as to all but obscure other features which have been a part of the phenomenal development of trade. The old spirit of personal identity with the various details of manufacturing, the knowledge which a generation ago was thought to be essential on the part of the proprietor, has largely been supplanted by the brains of the organizer. This is illustrated by a story of Mr. George H. Pullman who, some years ago, was asked some question in regard to an important matter in the sleeping car business. He touched a button, a young man came into his sanctum, and by Mr. Pullman's direction gave the desired information. Noting the quizzical look on the inquirer's face, Mr. Pullman said, "That is a part of our work which I find it advisable to hire others to do for me. I hold on to only one string in my business and that is organization."

A similar story is told of Marshall Field. One of the partners in his business retired from the firm unexpectedly. The same day Mr. Field selected another man from the ranks of his employes, put him in charge of one of the most important departments of his great store and, the following day, sailed for Europe. You see, Mr. Field held on to the same string—organization.

There are many aspects of this subject to be considered. Doubtless the most notable, as well as the most successful business organization, is that of the Standard Oil Company. As the head of that great concern, John D. Rockefeller, has achieved world-wide fame. He is the greatest alchemist the world has ever known, for he has turned a crude substance into a great stream of gold. But the source, as well as the channel, of this broad stream is not Rockefeller, but organization.

The perfection of the Standard Oil System is illustrated by the following story: Rockefeller is reported to have said to his son-in-law one day last December, "Well, boy, we have been making some changes and improving the organization, and we think we will make some money next year." The young man, who is connected with a cotton manufactory, replied, "I don't doubt that, but you will not make any of it from our firm, for we never buy a dollar's worth of oil from the Standard Oil Company." Where do you buy your illuminating oil?" he asked. "From such and such a company," he said. "Good, we own all the stock in that company," was the reply. "Where do you buy your lubricating oil?" From such and such a company in Pennsylvania," he replied. "I am vice-president of that company," said Rockefeller. Now, that may or may not be a true story, but there is little doubt but that the situation which it illustrates maintains in the oil business. But it is not Rockefeller who has done all thus, it is organization.

There is little likelihood of such an organization as the Standard Oil Company becoming operative in the clay world. But it affords an object lesson which clayworkers may well study carefully, for organization applies not alone to great combinations, to great cooperative bodies, but as well to the success of local industries and general individual enerprises. We are all familiar with instances of foolish and wasteful competition. Brickmakers are not alone guilty in this connection. All manufacturing lines of a local character are subject to the same criticism, but they are all learning that the key to large and permanent success is organization.

I presume, gentlemen, that when the Secretary asked me to speak on this subject, he really meant that I should speak of the benefits of the association, and while the terms are well nigh synonymous, there is a difference. One of the most direct benefits of association, such as this is, that it leads to and encourages organization among the members of the several districts throughout the State, and on this account it is to be regretted that the attendance to our State and National conventions is not more general. Many of our clayworkers do not appreciate the benefits of these meetings or there would be many more Wisconsin clayworkers here to-day.

To get an idea of the scope and magnitude of association work and its benefits, we may assume by way of illustration that associaations are to industrial life somewhat of the same nature and importance that our schools are to civic welfare. We may even extend this simile to comparing local associations to common public schools; State Associations to Normal High Schools; and the National Association to Colleges and Universities. This comparison may seem a little odd at first, but the more you study association work, the more intimately you become acquainted with it, the more natural this comparision may appear, for the great features of all our association work are educational. Not alone is this true in a broad and general way, but to a high degree in specific and technical lines. Because it is a part of our daily lives, being brought right into our homes by the progress of our children, we properly appreciate the importance of our school work. If it was brought closer to us, more of us would appreciate the value and importance of association work, for, as I have said, industrial associations are the same balance wheels to industrial life that public schools are to the education of the children. The great progress of the last generation in industrial affairs is due to the association of those connected with the various industries. American manufacturers have made wonderful growth during this time, the credit for which is generally given to Yankee inventiveness and American hustle and enterprise, and that is no doubt correct, but these influences find their best expression through our industrial associations.

Developments in the past decade have demonstrated clearly that associated effort is far more effective in all directions than individual effort; no matter how able or capable the individual may be. There is every reason to believe that industrial associations will wax stronger in the future and become still more influential in the development of all industries. Obstacles in the way of progress which might be insurmountable to the individual, are easily overcome by organized effort. A notable example of this is afforded by a recent occurrence in the clay world. Your neighboring State, Illinois, now has at the University of Champaign, a school for clayworkers. The appropriation for its establishment and maintenance was obtained by and through the Illinois Clayworkers' Association. When the President of that Association and a committee appointed for that purpose appealed to the Legislature as representatives of a State association, they were given an attentive hearing. Do any of you think that if they had gone there as individuals that they would have been listened to seriously for a moment? You who have had expeience in legislative matters know that they would not.

I see by your program that the question of the regulation of railroad rates is now under consideration, and I am confident that if you go before the proper tribunals, you will, as a State association, receive consideration that you cannot hope for individually. An instance of this same sort, but connected with an entirely different industry came to my attention recently. In one of our metropolitan cities there are quite a number of merchants who handle fruits and vegetables. They are commission merchants, hundreds of them who deal in perishable produce. For years past they have had to pay excessive rates to the railroads who justified same on the plea that they had to protect themselves from loss incident to the character of the goods shipped. Individual complaints were made time and again, but to no avail. Recently these commission merchants formed an association and a committee was appointed, and in less than two weeks' time, a readjustment of the rates was obtained. Your committee can hardly hope for such quick action, but you will certainly accomplish more as an organization than you could hope to individually.

One of the greatest benefits derived from membership in an association results from the friendly relation established with those who are competing in the same field. Competition is the life of trade, but unfriendly competition spells disaster to all who indulge in it. Friendly competition does not necessarily mean an agreement to fix or advance prices, but it does mean a rational comparing of notes and conditions, which ofttimes will thwart the foxy contractor who strives for a cut rate by misquoting one manufacturer to another. You who meet in these yearly gatherings, touch elbows and become personal friends ought to be immune from that species of imposition, and there are many other ways in which the relations growing out of these annual conventions are profitable as well as pleasant.

Improvement in quality of product is another benefit derivable from membership in industrial associations. No thinking manufacturer can participate in these deliberations, and the button-hole talks in the lobbies without positive and direct benefit. These interchanges of personal experiences lead to improvements in methods of manufacture, which insures greater economy and a better product. Clayworkers who do not attend these gatherings, may look over the proceedings and because they do not discover some new and remarkable suggestions for money-making, may conclude that there is nothing for them to learn there. Others may read the report of the convention studiously and with profit, and think that they have realized the full benefit of the convention without the expense of attending. Both classes deceive themselves to their own loss. To many, the convention papers and discussions are really of less value from a practical point of view to those who attend conventions, than the confidential lobby talks, for through the latter means, practical men get specific information upon minor details of their business, which ofttimes are extremely important and valuable.

Then there is the social side, and who is there among us all who would undertake to measure in dollars and cents the value of the friendships formed and the delights of personal intercourse of these yearly gatherings? Do you know I have a supreme sympathy for the man who blindly ties himself to his daily work and, under mistaken thought that it demands his every moment, deprives himself of the joys and pleasures incident to occasions of this sort. It is a mistaken policy and those given to it need the leaven of the spirit of organization. I feel and believe that there is something wrong with a man's business methods if he cannot leave his business at times for a day or two at least. The man so tied becomes narrow, and if his working days are not shortened, his capacity for work is lessened by his narrow field of vision. Not the least of the advantages of association is the broader and stronger grasp that it gives of one's personal affairs and of the more comprehensive view of the general affairs of life.

Now, gentlemen, most of you will agree with me that life is not all in the acquisition of wealth. There is another side, the development of our better selves and these yearly meetings certainly tend to the cultivation of that better side. If no other purpose was achieved, our conventions, would not be in vain, but time well spent. An unknown verse writer has touched on the futility of the mad chase for dollars in a quaint way as follows:

LIMITATIONS.

John D.
May be
  Richest man we ever see,
But, Gee!
Say, he
  Ain't no better off'n me.
Billionaire!
Don't care;
  Can't breathe more'n one man's share.
His fare?
Show where
  He eats more'n my three square!
Clothes fine?
Well, mine
  Cover me in rain or shine.
Right in line,
His an' mine
  Answerin' the same design.
Housed; fed;
Once wed;
  So am I, so there, by Ned!
When dead—
Same bed—
  Three-by-seven—'nough said!

You who are gathered here to-day are awake to the importance of working concertedly to promote the clay industries and will profit by it, I am sure. Let us hope that the other fellows, the absentees, who are asleep to all this or are slaves to the daily grind, may too be beneficiaries to some extent and that ultimately the benefits of association may touch every clayworker in the land. (Applause.)

Discussion.

President Wilson: Has any one any remarks to make on this excellent paper just read? Mr. Ringle, what have you to say?

Mr. Ringle: I supposed silence implied consent. We all agree with the paper. It is very ably written. Those of us who are connected with the Association and those of us who have had experience know that the statements are not overdrawn. The value of organization are almost inestimable as are the benefits of these meetings—especially to me. I know I derive a special benefit in them. They are a part of my life and they are beneficial, directly or indirectly, to everyone who becomes a member and joins the Association.

Mr. Bright: I am not very well posted on the subject, but I think we all appreciate Mr. Randall's paper. He comes quite a ways to come here and puts himself out in order to do so, and we ought to extend to Mr. Randall a vote of thanks for the interest he takes in the convention.

A motion was made and seconded and unanimously carried.

Mr. Randall: I thank you, gentlemen, for your words of appreciation. I will use the old society phrase and say, 'the pleasure is all mine.' I am like an old friend of mine. I always carry away more than I give. If we can only get these facts into the minds of the clayworkers at large, our association's attendance will increase. They are the losers by not being here.

President Wilson: I may say for the benefit of the members of this Association that it seems that Mr. Randall made quite a strenuous effort to get here. He came in last night almost too late for the banquet, having just discovered that he could get here by way of St. Paul. If there is no further discussion, I will say that this concludes the papers on the program. We now have a few details, and the first on the list is the report from the Secretary. Unless there is something to come up before the meeting before taking up these reports, we will now listen to the report of the Secretary. Mr. Ringle, if you desire to have a meeting of your Committee, Mr. Gunther and Mr. Meier, you can use one of the rooms up-stairs or that of Mr. MacArthur—both are good places.

Mr. Hamilton: I did not prepare a written report. It only consists of a statement of receipts and disbursements and that has been turned over to the Treasurer, Mr. Zimball, whose report includes my own.

President Wilson: If there are no objections we will accept this much of the report from the Secretary and hear from the Treasurer, which will include his financial transactions.

Mr. Zimball: The report is as follows:

RECEIPTS:

Balance in Treasury last year	$ 79.64	
Received from Dues	10.00	
Received from Advertising	80.00	
Received from Dues at Menomonie	67.00	
Received from T. A. Randall & Co. (For Report of Convention at Manitowoc)	8.00	
Received from Harry de Joannis (For Report of Proceedings at Manitowoc)	8.00	
		$252.64

DISBURSEMENTS.

Paid Julia Buritz for reporting Convention at Manitowoc	16.00	
Stamps	14.81	
T. A. Randall & Co. (three hundred reports)	48.00	
Stationery	8.25	
Express	2.54	
Balance in Treasury	163.04	
		$252.64

Mr. Randall: I move that the report be received and approved and placed on record.

The motion was seconded and carried unanimously.

President Wilson: The next number on the program is the report of the Committee on the Lien Law. Has that report been submitted yet?

Secretary Hamilton: I have not yet received any report.

President Wilson: Mr. Kennedy, can you give us any light on the subject. This Committee was appointed two years ago and last year they were not ready and we gave them another year. Mr. George Schwartz was one member.

Mr. Kennedy: I think it is about time they were discharged.

Mr. Randall: Mr. President I have seen this lien law tackled. Is your lien law satisfactory?

Mr. Kennedy: Yes.

Mr. Randall: Then, let well enough alone. If you have a fairly good lien law now you had better keep it, because if you go before the Legislature—unless you have an influential committee—you never know what you will get, and take a chance of getting something much less satisfactory than the existing law. If your lien law is satisfactory, you had better leave it alone unless you have a good strong committee, and one which will work for the Association as a whole and concertedly.

Mr. Kennedy: That is the reason why they did not do anything; they could not agree on any one course of action to take.

Mr. Vogt: I know a little about the lien law. Last year I had some dealing with the Secretary of the Lumbermen's Association and asked him for his views and what was the best to do and whether we could not associate ourselves with the lumbermen on this point and he said that we might lose what little we have and that they (the lumbermen) were afraid to tackle it and that we had better leave it alone.

President Wilson: We had better then leave that matter as it is for the present. Has Mr. Vogt anything to say on the next subject, "Railroads?"

Mr. Vogt: I have nothing specific to offer on this point. Many complaints have been made against discrimination by the railroads against shippers of brick in Wisconsin in favor of outside shippers into this State. In Milwaukee quite a number of complaints have been made but I could never find any specific claim on which we could base our action and I have not heard of any brickmaker who had such specific claim that he could substantiate. Of course, we can hire an attorney, but we must state some specific complaint—what that complaint consists of. I told Mr. Burnham before I left that I did not know of any basis for action against the railroad nor did I know of any other shippers in Wisconsin that could furnish them. Our firm do not ship brick to amount to anything; and, while we have been complaining that the railroad companies transport brick shipped to Milwaukee from Chicago on a discriminative basis, we have no specific case for action.

Setting Pressed Brick in Down-Draft Kiln.

President Wilson: Mr. Kennedy opened up this subject yesterday pretty well and if he has anything else to offer, we should like to hear it.

Mr. Kennedy: Mr. President, I think you have in your posession now a paper on this subject but which I do not care to have read at the present time because it may reach the wrong parties at the wrong time; but in that paper which I put in your hands, I cite a specific cause, giving the rate, the paid receipt, etc. How I got this evidence is no one's business, but I got it. I have just recently been through the State—through the northern part of it—and while on this trip I made it a particular point to look into this matter. I have talked with brick men in that territory and find they have the same complaint to make. I have looked into this matter and I am well aware that you cannot come out in a crowd of men like we have here and state all that you want to state, and that you want your attorney to prove; but I am confident that if we get some attorney that is not receiving a retaining fee from the railroad companies—that will go before the Rate Commission and who will start an investigation at once—I am confident that when this is done it will be up to the railroad companies to show their books. I think then the Rate Commission will look after this matter.

President Wilson: For the benefit of those that were not here yesterday, I wish to state that a resolution was passed authorizing the chair to appoint a committee of three to take this matter in hand and the committee was not to be named until today, as it was expected that Mr. Burnham of Milwaukee, would arrive in the meanwhile. Unless there are some objections the chair will announce the committee. The committee that has been appointed consists of Mr. Kennedy, of Manitowoc, Mr. Burnham, of Milwaukee, and Mr. Clifford Chase, of Milwaukee. One of the difficulties that this committee is up against is the fact that it is a very difficult matter for them to do anything along the lines indicated without spending some money. If we are going to appoint a committee and expect them to accomplish anything, we have to provide them with the needful to engage the services of the party that it is necessary for them to have. What is the pleasure of the Convention?

The Hydraulic Brick Press.

Mr. Hinkley: It has been suggested to me that inasmuch as Milwaukee is not a shipper of brick that one member of that committee should be appointed from some other place where there are shippers of brick in place of Mr. Clifford Chase. A man from another part of the State should be a member of that committee. I make this as a suggestion—not as a motion.

Mr. Randall: Let Mr. Hinkley suggest the name of a gentleman who is a shipper of brick as a member of that committee.

Mr. Hinkley: I would suggest the name of Mr. J. G. Hamilton, of Grand Rapids, Wis., as a member of that committee in place of Mr. Clifford Chase of Milwaukee.

President Wilson: Before putting the motion, I would be glad to accept the suggestion of Mr. Hinkley that Mr. Hamilton's name be substituted for that of Mr. Chase as a member of this committee.

Mr. Hamilton: I believe that there are quite a number of members who are more extensive shippers of brick than my firm and we want a man who will have the most influence with the Rate Commission. I am perfectly willing to act on the committee, but I believe a better choice could have been made.

Mr. President: I suppose it is understood that Mr. Hamilton's name is accepted in place of Mr. Chase's whom the chair originally appointed as a member of this committee.

Mr. Bright: I think it would be wise to make some provision that this committee would have power to draw on the Treasurer. They might have to make a trip to Madison and see the Commission, etc.

President Wilson: As some of the members have expressed themselves that it is necessary to employ legal advise, I think most of you that have had experience in employing legal advise will know that it costs money. We cannot expect this committee to do the work that is before them and accomplish anything without authority to use at least a certain amount of money for this purpose.

Mr. Kennedy: There is no money asked by the committee except the pay for the attorney. I speak for Mr. Burnham as well, for I know him and for Mr. Hamilton. Last year we did some work and have gone to some expense, etc. I want it to be understood that if you allow anything that it is to be for expenses. It is to be only for the attorney; he must be paid, and it is not fair to ask us to guarantee the fees of the attorney.

President Wilson: In order to have a definite understanding before the Association, Mr. Kennedy, I would like to have you state what, in your opinion, would be a reasonable limit to place.

Mr. Kennedy. I could not tell you what the cost would be; I am just as much in the dark about that as you.

Mr. Hamilton: I notice our balance is now $163.00 in the treasury. Of course, that is a balance that we ought to keep. I think it would be a good idea to levy an assessment on the members—such as is necessary to cover the attorney's fees. I think we would have no trouble in collecting such an assessment.

Mr. Kennedy: I know of no particular reason why we should keep the money in the Treasury: I think you had better spend that money as soon as you get it. The expense of an attorney to draw up the proper papers is necessary and to go before the Commission would not be much—how much I do not know, but I should think they ought to give the committee the privilege of using their own judgment, to not to exceed $100.00. If it should come higher than that I, for one, would be willing to guarantee the cost of the attorney's fees and bring it before the convention next year, and I believe I will be supported in that.

President Wilson: What is the pleasure of the Convention?

Mr. Vogt: I make a motion to the effect that the committee be authorized to draw on the treasurer for legal advice not to exceed $100.00.

The motion was seconded and carried.

Mr. Lowater: Is the purpose of the committee to cover any particular case, or is it general in its character?

President Wilson: I understand that it is any railroad business that they may have occasion to look into relative to Wisconsin business. There is no certain item yet that we are after particularly. We will now take up the next item on the program. I did not prepare a large question box for this occasion, but I think it will be understood that any questions that any of the members wish to ask can be handed to the Secretary or asked at this time in person. Has any member present any question along the lines of his work that he wishes discussed?

Mr. Bright: As I understand it—if any member has any grievance with the Chicago companies on rates that they take it with the committee just appointed.

President Wilson: Yes, as the Wisconsin Clayworkers' Association, gives them more pressure.

Mr. Randall: Along that line just a word. Is there any particular railroad that is guilty of giving rebates, or are all the railroads equally guilty? If not, if you can find one of the lines that will take your business—all of your business—you could make arrangements with them and then the other railroads will soon come into line.

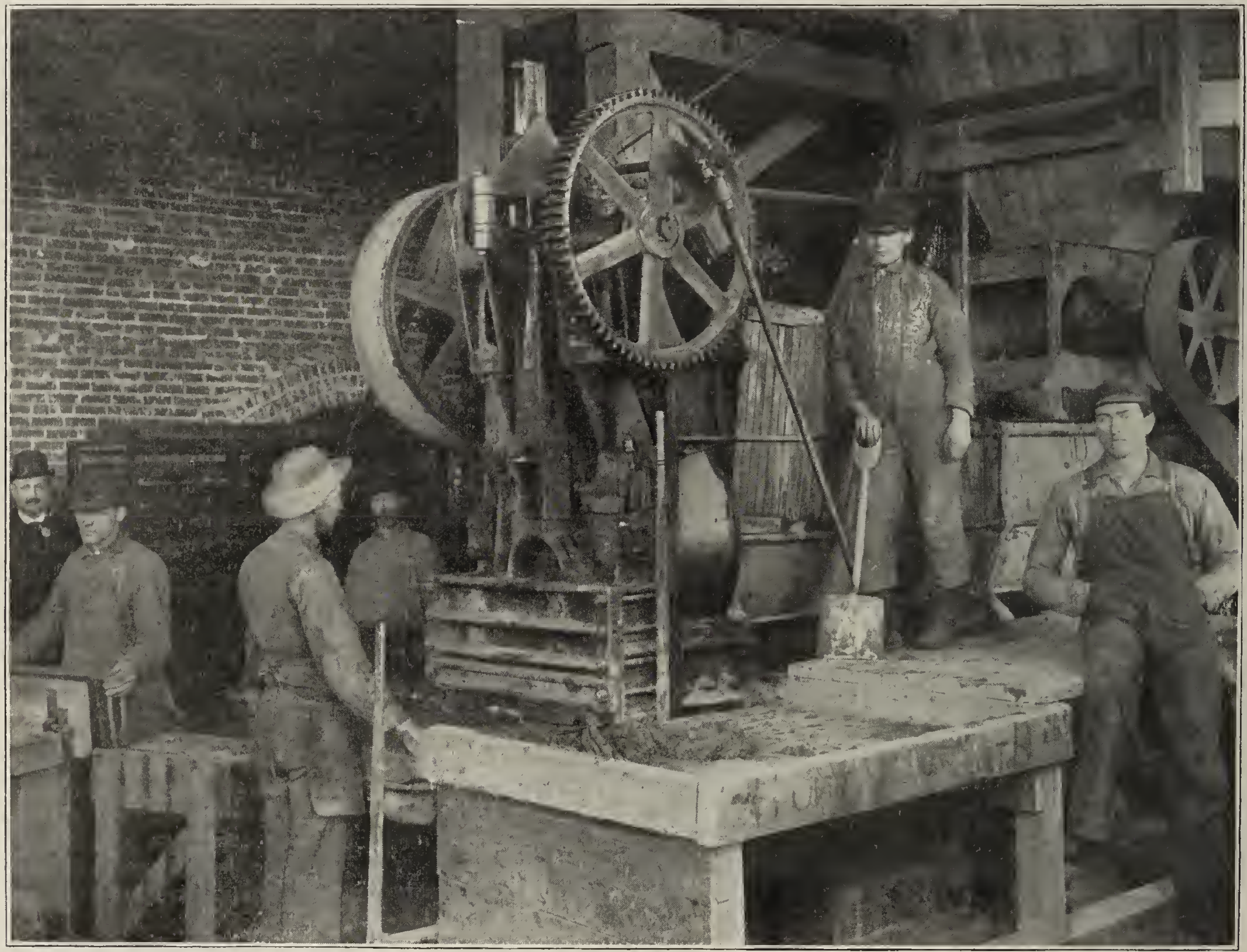
Mr. Kennedy: But most of us are on only one line. You have to do just as they tell you—just as they do with the long distance telephone. "If you don't like it you can lump it."

Mr. Ringle: I understand that in the present situation we propose to see what effect our Railroad Rate Commission—what authority they have in regulating these rates—and place our complaints in their hands and ask them to make a good rate for all of us and Chicago shippers as well as ourselves. We want them to regulate the rates and to make no discriminations. There are only two railroads in the State running out of Chicago, the C. M. & St. P., and the North-Western, and it is impossible to try the remedy suggested by Mr. Randall.

Mr. Stoll: As Mr. Ringle has said, there are only two railroads running out of Chicago which touch any of the brickyards there. The Burlington has no brick factories on their line and I do not think the Wisconsin Central has any. It is not as though you had a whole lot of railroads.

Mr. Crabtree: I do not know very much about the rates, but I do know a little something about the Rate Commission and the power they have. Judging and going by a decision of the Supreme Court of other States, especially in the Northwestern States, this Commission has the authority conferred upon them by the Act authorizing them to reduce rates, make rates on complaint of any shipper or any citizen of the State or anyone to reduce a rate to any point not below where it would yield a reasonable compensation for the services performed on the part of the railroad company, and where they have no authority for through rates, they can in a manner equalize the rate to the State line, and I think that if this committee goes before the Rate Commission, and lays this matter before it properly, it will succeed.

Mr. Chapman: I think that Mr. Hinkley has stated the case about right and that is, that this present committee can do nothing but preliminary work. I think, though, that Mr. Crabtree is mistaken if he intended to state that the Wisconsin Rate Commission can in any way control the rates from Chicago to Wisconsin. They cannot change that through rate nor can they stop the rebate. If the Chicago companies get rebates they cannot help that. If this com-



The Potts Soft Mud Brick Machine, Albert Potts at Extreme Left.

mittee has to do with questions that involve rebates on through rates from outside points of the State, it is a question that will have to be brought before the Interstate Commerce Commission and $100.00 would not be a drop in the bucket for anything of that kind. Therefore, I think that this is preliminary work. I do not think that these questions, if they affect a certain community only or a certain territory only should properly be taken up by the association, and that the dealers in that locality should stand the expense—the dealers who are actually interested. I think the association proper should be used only in advancing questions that are of interest to all of us. Questions of this kind would be of no interest to me and probably not to many of us with yards in this part of the State, except to investigate and see what the trouble is.

Mr. Crabtree: I was in Madison last winter at the time this question was before the Committee and the sense of the meeting at that time was that it should have the authority as I explained before. I think if you will look up the records, you will find that this is so.

Mr. Chapman: The Constitution is so constructed that the State cannot interfere with anything outside the limits of the State. They have nothing to do with shipments that originate in Illinois.

Mr. Russell: I am not a member of the association; I am simply a visitor, but I have your interest certainly at heart, and as an outsider, I can look at the matter with perhaps somewhat different glasses than the others. It has been my privilege in the past few years to be in a more or less degree interested in the manufacture of vehicles and implements, and I attended their National meeting three years ago, and I was very much interested in the work they were doing as a National organization with the railroad companies. The report of their committee on railroads at that meeting was most flattering after they had realized that they had saved their members a great many thousands of dollars in the matter of rates. This organization is one of the best National organizations that I know anything about, and the members of these State organizations and the officers of them would get a great deal of valuable information and a great many points of interest from the officers of that organization. I am heartily in sympathy with Mr. Randall's remarks with reference to organization. One thing that I remember—they had a National attorney that was employed by that organization who was willing to give advice free of charge to any of the members of that organization, and at this time I would like to ask Mr. Randall if the National organization of clayworkers has a paid attorney.

Mr. Randall: The National Brick Manufacturers have never had any occasion to employ an attorney—the National organization is an educational, not a commercial body.

Mr. Russell: The remarks that I have to make are simply as a suggestion, and it seems to me that this committee that you have appointed this afternoon would correspond with the officers of the National organization that I have spoken of, they would perhaps get some information that would do them untold good. Mr. Staver, of the Staver Buggy Co., Chicago is a very active member of this association and can give you the names of all the officers and is just the person to go to, and if this committee would confer with them they would find these men very gentlemanly and hospitable people to talk with, and who would be only too willing to give them the benefits of their labors with the railroads in the investigations that they have been up against in the railroad proposition.

Square Down-Draft Kiln During Early Stage of Firing—At Plant of Menomonie Hydraulic Press Brick Company.

Mr. Hinkley: I just wish to remark in a few words that the most of us who are interested and have gone into this matter firmly believe that these shippers from Chicago not only ship their brick into this country at 8 or 10 cents per cwt., but that they actually get a rebate. I do not know if we have any means of proving that, but I think that this committee can investigate that matter and if they do not find that they get a rebate they can take some action. The railroads have to publish their rates and adhere to them. The committee might investigate this and get some reliable information on the subject.

Mr. Kennedy: That is why the committee needs legal advise—to get the law reduced to writing. Don't think for a moment that you are going to fight two railroads and get a reduction in the rate. $100.00 goes to the attorney to draw up his papers and bring the matter before the Rate Commission and then we are in the hopes that the Commission will take it up; what they can do we do not know.

President Wilson: I think the members fully realize that this is merely a step toward preliminiary work that will bear fruit for those that are most interested. If there is nothing further at this time, we will hear the report of the committee on resolutions, which the Secretary will read.

REPORT OF COMMITTEE ON RESOLUTIONS.

Resolved: That the Wisconsin Clayworkers' Association assembled at Menomonie, Wis., March 10th, 1906, express to Mr. P. H. G. Duerrwaechter, its deep sense of corporate loss caused by the death of Arthur Duerrwaechter, one of its promising members.

Let it be further resolved: That the Secretary of the Wisconsin Clayworkers' Association be instructed to send a copy of this resolution to Mr. P. H. G. Duerwaechter.

Resolved: That the thanks of the Wisconsin Clayworkers' Association be tendered to the officers of the Association for their efficient and faithful service during the past year:

That the Association express its sincere appreciation of the unique service rendered by Miss Reinhart and her able corps of lady assistants in satisfying their gastronomical needs; also their admiration for the tastefully decorated tables:

That the Commercial Club be notified of the standing vote of thanks given to its members by the Wisconsin Clayworkers' Association for the wealth of hospitality and lavish thoughtfulness shown to the Association by the gratuitous use of its building, its furnishing of orchestral delights, its never-to-be-forgotten banquet and a shower of minor attentions which have contributed in full measure to the thorough enjoyment of the Wisconsin Clayworkers' during their visit to Menomonie:

Further: That the thanks of the Association be given to the speakers of the evening at the banquet, and especially to Mr. Nolan and Professor N. J. MacArthur:

And last, but not least, that the Association express its sincere appreciation of the hospitality of the Menomonie Hydraulic-Press Brick Co., the Excelsior Brick Co., and the Wisconsin Red Pressed Brick Co.

SAM GUNTHER,
S. WEIDMAN,
HARRY DE JOANNIS.

The report was adopted by a rising vote.

President Wilson: We will now hear from the committee appointed for the purpose of looking into the matter of raising the dues of this association and the matter of the distribution of the reports.

Mr. Hinkley: The committee have had the matter under consideration and, while we tried to look at the matter in all its aspects and bearings and with particular care, come to the conclusion that with the ordinary work that we do here and the ordinary expenses that we are under for the publication of our reports and that there having been a gain each year in the treasury and that we have more money now in the treasury than for ordinary expenses, we have come to the conclusion that unless we have some extraordinary expenses to incur we do not care to raise the fees. If we go into litigation with the railroads, that will be different. We thought it best to wait for that until next year until this committee on railroads find out what we have to do. As to publishing the reports, as far as we have been able to talk with the members, they are all desirous of having the reports printed, and it seems as long as the advertising pays for the printing of the report, we ought to send them to every member of the association and to every brickmaker in the State so far as known. That is the judgment of the committee.

President Wilson: It is not so much the expense of getting out the report as the fact that some manufacturers and brick men who are not members of this Association get hold of the report, read it, and say to themselves, "What is the use of joining the Association so long as we can read the reports?" It is more for the purpose of increasing our membership by having them sent to the members of this Association only.

Mr. Hinkley: The committee looked at it in this way—that by circulating the reports it will bring us new members. In sending these out we let people know that we are organized and it will bring us new members.

Mr. Finnegan: I might state that my being here is entirely due to the efforts of Mr. Randall. He did not give me a moment's rest until I joined.

President Wilson: We will now hear, if there are no objections, from the committee appointed to name a place for the next meeting and the names of the officers for the coming year.

Mr. Ringle: The committee has considered the matter and begs to report as follows:

To the Wisconsin Clayworkers' Association: Your committee recommends that the place and time for holding the next annual meeting of the Association be subject to the decision of the newly elected officers of the Association. Your committee respectfully recommend the following gentlemen as officers of the Association for the ensuing year:

President, Ben H. Bright; Vice, President, S. J. Guenther; Secretary, J. G. Hamilton; Treasurer, Oscar Zimball.

Your committee is unanimous on this report except as to Vice-President, from which recommendation Mr. Guenther dissents. (Signed) John Ringle, Sam J. Guenther, W. L. Meier.

Mr. Bright: For personal reasons I positively decline this honor.

Mr. Covey: If it is necessary, I move that the officers reported by the committee be declared elected and that the Secretary cast a vote for the Association in accordance with the recommendations of the committee.

Mr. Bright: I absolutely refuse to act; I have my own personal reasons for this. However, I deeply feel the honor that you have bestowed upon me, but I must repeat—I absolutely refuse to act.

President Wilson: This is without precedent and I am at a loss to understand why Mr. Bright should feel as he does. Mr. Bright is perfectly able in every way to perform the duties as an officer of the Association; he has experience in the Association and it does not seem as if it ought to be necessary to ask anyone to be President but to leave that to the will of the convention to decide for themselves and let their decision be final. I appreciate, no doubt, how Mr. Bright feels, because at the meeting last year, the nomination was more or less of a surprise to me, and I wish to say that I highly appreciated the honor. So far as the work in the past year is concerned, it was somewhat laborious, but it has been connected with a great deal of pleasure.

Mr. Randall: Mr. Bright has no doubt some very vital reasons for this or I am sure he would not refuse, but since this is the case, and he absolutely refuses to act, we must look for other timber. You cannot improve upon your present President. What is the matter with his serving another term? I move that Mr. Wilson's name be substituted for Mr. Bright's name, or rather I make this amendment to Mr. Covey's motion that the Secretary cast the vote of the convention to the effect that Mr. Wilson, together with the other officers named by the committee be declared the officers of this Association for the ensuing year.

The Secretary cast his vote in accordance with the above motion, after the later was seconded and unanimously carried.

President Wilson: Gentlemen of the Association, if I had known what Mr. Randall was going to say, I would have called him out of order before he got started. This is also without precedent. This is the first time in the history of this Association that a president has been re-elected, and I feel, of course, highly honored, and after what I have just said with reference to Mr. Bright's refusal, it would be the least I could do to accept it, but under the circumstances, I am very pleased to do so and I hope that our work during the coming year will be as beneficial as it has been in the past. I also hope that the attendance at our next meeting will be much better and more interesting from the start to the finish. I assure you that I appreciate very much the sentiment expressed here and can only use the word "Thanks" at this time. (Applause.)

Mr. Lowater: Was there anything settled as to the place for the next meeting?

President Wilson: The report of the committee specifies that the place and exact time be left with the newly elected officers. The sentiment of the convention is in order on the subject.

Mr. Ringle: The committee canvassed this question to a considerable extent and we thought that the officers of this Association could give this question of locating the next meeting further investigation. The situation in Madison is a little peculiar. The representatives of the brick industries at Madison have been friendly to this Association ever since we met there. We have a great many friends in Madison, and I believe it is beneficial for this Association to go to the most convenient place, and I think where you can get the best attendance is the place to go. I think, no matter whether the officers of this Association go to Milwaukee or Madison, it will be satisfactory to the members of the Association. That was the opinion of the committee.

Mr. Weidman: I think if the sentiment of the convention is known at this time it would be easier for the officers to decide.

President Wilson: That is a very good suggestion, and before we adjourn, I will ask the Secretary to pass around among the members with slips of paper, getting each one's views on the matter. These slips will afterwards be handed to the officers who will take them into consideration when deciding upon the place for the next meeting. Now, if there is no further business before this convention, it is in order to adjourn until the next annual meeting at a time and place to be afterwards named by the officers of the Association elected for the ensuing year.

On motion, the convention adjourned, sine die.

LIST OF MEMBERS OF THE WISCONSIN CLAYWORKERS' ASSOCIATION, 1906.

W. H. Carter,	Appleton, Wis.
M. M. Ross,	Antigo, Wis.
C. S. Morris,	Berlin, Wis.
B. H. Bright,	Black River Falls, Wis.
Wm. Meadows,	Burlington, Wis.
E. R. Frazier,	Chicago, Ill.
C. H. Hartwell,	Chicago, Ill.
H. De Joannis,	Chicago, Ill.
J. J. Moroney,	Chicago, Ill.
H. S. Hopkins,	Chicago, Ill.
M. W. Blair,	Chicago, Ill.
J. B. Theriault,	Chippewa Falls, Wis.
L. T. Crabtree,	Crandon, Wis.
W. Dorchester,	Durand, Wis.
Geo. F. Thompson,	Eau Claire, Wis.
Royal Parr,	Edgerton, Wis.
L. C. Whittet,	Edgerton, Wis.
I. T Peterson,	Ellsworth, Wis.
H. G. Haas,	Fon du Lac, Wis.
F. J. Moeller,	Forestville, Wis.
J. G. Hamilton,	Grand Rapids, Wis.
J. W. Hinkley,	Green Bay, Wis.
A. H. Finnegan,	Green Bay, Wis.
T. A. Randall,	Indianapolis, Ind.
C. & A. Potts & Co.,	Indianapolis, Ind.
J. S. Fifield,	Janesville, Wis.
B. E. LaDow,	Kansas City, Mo.
Norman L. Neir,	La Crosse, Wis.
S. Weidman,	Madison, Wis.
G. W. Kennedy,	Manitowoc, Wis.
Ed. Fricke,	Manitowoc, Wis.
Stephen Bertler,	Manitowoc, Wis.
L. Franz Wolfel,	Manitowoc, Wis.
Wm. Fricke,	Manitowoc, Wis.
Oscar Wilson,	Menomonie, Wis.
J. D. Pratt,	Menomonie, Wis.
W. A. Drowley,	Menomonie, Wis.
J. P. McLean,	Menomonie, Wis.
J. W. Brownrigg,	Merrimac, Wis.
W. H. Covey,	Minneapolis, Minn.
J. Q. Burnham,	Milwaukee, Wis.
Clifford Chase,	Milwaukee, Wis.
G. J. Schwarz,	Milwaukee, Wis.
F. Vogt,	Milwaukee, Wis.
The Western Builder,	Milwaukee, Wis.
F. Freeze,	Monroe, Wis.
Zerrener Bros.	New London, Wis.
F. E. Swift,	Ottawa, Ill.
H. W. Carter,	Oshkosh, Wis.
Otto Krauss,	Plymouth, Wis.
J. D. Fate Co.,	Plymouth, Ohio
J. Schramke,	Port Washington, Wis.
Guenther Bros.,	Port Washington, Wis.
F. L. Sanborn,	Portage. Wis.
A. W. Hilker,	Racine, Wis.
Aug. Schram.	Ringie, Wis.
E. R. Buckley,	Rolla, Mo.
Oscar Zimbal,	Sheboygan, Wis.
J. Froehlich,	Sheboygan, Wis.
Geo. H. Chapman,	Stanley. Wis.
S. L. Alexander,	Stanley, Wis.
Frank Lowater,	Spring Valley, Wis.
H. Brewer & Co.,	Tecumseh, Mich.
C. D. Henrichs,	Tomah, Wis.
John Ringle,	Wausau, Wis.
L. H. Cordes,	Watertown, Wis.
A. J. Pick,	West Bend, Wis.
G. C. Stoll,	Wheaton. Ill.
Jacob Voelker,	Winona, Minn.
Frank D. Biesanz,	Winona, Minn.
Ben Truber,	Wonewoc, Wis.
Will Truber,	Wonewoc, Wis.

THE SOCIAL SIDE AT MENOMONIE.

The convention at Menomonie was a memorable event to the clayworkers of Wisconsin who gathered there nearly one hundred strong, and enjoyed two very delightful days. The report of the sessions which we give in full is but an echo of the swapping of trade lore which was carried on incessantly between sessions. The spirit of good fellowship dominated every feature of the meeting. President Wilson, his associate, Mr. Hewson, the members of the Menomonie Commercial Club and their wives, and the teachers and scholars of the Manual Traning School, severally and collectively, devoted themselves unselfishly to the entertainment of the visitors.

The Annual Banquet

was unique in that the good things spread so bountifully for the delegates were prepared and served by the class in Domestic Science of the Stout Training School under the direction of Miss Gertrude Reinhart, and was a never-to-be-forgotten object lesson of the advantages of such training. That school children could prepare and serve so well an excellent dinner for a hundred or more guests, is hard to believe until one has "gone against it."

The banquet was served in the gymnasium, a large and elegantly appointed feature of the school, the acoustic properties of the room were well nigh perfect and the speeches that followed though rendered in conversational tones were easily heard by the entire audience, including the gallery where were gathered the wives and daughters of the local committeemen. President Wilson acted as Toastmaster and in a happy way introduced the speakers of the evening, chief among whom was Mr. W. I. Nolan, of Minneapolis, who entertained the assembly with a series of recitations and anecdotes that caused much merriment.

The Trip to the Brickyards

Saturday afternoon was spend among the brickyards in the vicinity, all of which were described in detail in the last November issue of the Clay-Worker. A special train was provided by the local committee which took the visitors to the yards of the Wisconsin Red Pressed Brick Company, The Excelsior Brick Company, and the Menomonie Hydraulic Press Brick Company. The day was clear and just cold enough to make one feel like hustling. Of course President Wilson's plant was inspected with more than usual care and interest. Like all hydraulic plants, it is well ordered, and the equipment is first-class in every particular. At the time of the visit they were making soft mud brick on a Potts outfit at the rate of 40,000 per day. Mr. Albert Potts of Indianapolis, was the observed of all observers here, and was made happy by a number of complimentary references to the excellence of the work turned out. The hydraulic presses were also in operation and were surrounded by a curious throng during the hour spent at the plant. Several kilns were under fire and the system of drying with waste heat was investigated carefully by those interested along that line. A new feature of the plant, an automatic brick carrier recently installed by the Mathews Gravity Carrier Company, of St. Paul, attracted much attention. The brick were being conveyed from the stock piles into the cars by means of an incline fitted with rollers over which the brick pass quickly and safely. On the way townward a stop was made at the Globe Iron Works where the visitors were presented with leather match cases, and shown the inner workings of the White gasoline engine, the chief product of the company. All in all, the trip was an enjoyable affair and gave the visitors a good idea of the extent of Menomonie's chief industrial interest, brickmaking. On page 630, 631, 632, and 633, are shown views of portions of the Hydraulic Press Brick Company's plant.

A feature of the entertainment afforded which the writer enjoyed hugely was a plunge in the swimming pool which is a part of the Training School. The latter, all in all, is a wonder. Few cities of ten times the size of Menomonie can boast of a school so well equipped and admirably managed. It is a monument of an endurng sort to the public spirit and the high aims of the citizens of that community.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Clay-Worker Their Best Friend.

Editor THE CLAY-WORKER:

Replying to yours just received will say we will answer this with draft enclosed before it is forgotten. The amount is small and very easily forgotten, but we could not do business without THE CLAY-WORKER, as we consider it our best friend.

We enclose draft for $2.50. Kindly send THE CLAY-WORKER and pocket kit, and oblige.

Very truly yours,

Harvey, Iowa. Harvey Brick and Tile Co.

The Chicago Brick and Building Situation.

Editor THE CLAY-WORKER:

In the building line, the season of 1906 appears to be every bit as good, if not a trifle better than that of 1905, which was nearly phenomenal. All the leading brick and clay product material dealers say that they are more than busy, and the orders keep coming in all the time with a regularity that is encouraging. As one dealer put it, "It is not a boom; it is good business."

While much building of all description is in progress in every part of Chicago, the great West Side seems to be leading. Not in years has there been such a building spurt as there is in that part of town now. Single dwellings, apartment houses of various types and sizes, schools, churches, and mercantile and manufacturing structures are going up by the hundreds, brick of course being the chief ingredient of the constructive mixture.

S. S. Kimbell, who has been ill for a long time is getting around to his office again. Herman L. Matz, of the S. S. Kimbell company has been having a three weeks fight with pneumonia, but is believed to be out of danger.

Chicago, Ill. SCRIP.

One Danger that Threatens the Brickmakers of the N. Y. District.

Editor THE CLAY-WORKER:

With the outlook for the clay industry so promising the country over, it is almost sacrilege to even suggest that there may be a danger, but a very real danger menaces the business unless something occurs to check the present tendencies. It is nothing more nor less than the great number of new incorporations, all of which are supposed to be organized, to manufacture something of clay. It may be one thing, it may be another, but at any rate they propose working in clay and that will create competition.

In one way, of course, it is gratifying. It indicates the great prosperity of the business. These numerous incorporations would not be recorded if there wasn't some prospect of a return upon the money invested, or supposed to be invested in these companies. Nevertheless, it would be better if things were left substantially as they were last year. Men who have been in the business for years have steadily lost money up to a year or so ago. Last year they actually began to recoup themselves, but if this constant stream of new companies for the manufacture of brick continues there will be an end for profits for everybody.

While it is not wise to have an industry virtually in the control of a few manufacturers or individuals, neither is the outlook good when fresh firms, with more or less hazy capital are entering the field in shoals. There promises to be much competition which might better be dispensed with.

Hacket of Hackensack

The Speed Limit of Brick Machines.

Editor THE CLAY-WORKER:

After reading the article written by M. W. Blair, of Chicago, Ill., which was read by him at the N. B. M. Association at Philadelphia, not being able to attend the convention at Philadelphia to hear the article read by our friend who wrote it, I of course, could only have recourse to the printed article as published in your valuable journal, THE CLAY-WORKER, and therefore, I write this letter. We, of course, must all agree that Mr. Blair in his article furnished us with many valuable suggestions which should be thoroughly taken into consideration by the brick manufacturers of the world. Where he is in the right we will certainly all agree with him, when we can see the things, represented by him in the same light, but as we do not all of us grasp all his ideas in the same light, that he, in his article has so represented, it gives us an opening to show that we cannot all see the matter in his way. We, of course, are aware that there is not anything so bad that therein can be found some good. Neither is there anything so good that therein cannot be found anything to the contrary, so then we will agree with Mr. Blair, where we think him right, and disagree when we think him wrong. In the installation of better and speedier brick machinery in a great many of the plants we think him right. But when he says that the brick machine or mill in the stiff mud process has reached the limit of the automatic brick cutter, he certainly cannot be acquainted with the Bensing Automatic Cutter, manufactured by the J. D. Fate Co., of Plymouth, Ohio. These cutters have, and do accomplish the feat of severing the columns of clay into brick, square, true, and in excellent condition at any speed that any machine has been able to deliver the column to the automatic cutter, and the cutters are always ready for more which they would successfully cut or sever into the article desired, in number one shape, and when it comes down to the facts in the case, the brick machine or mill has not, or is not yet manufactured that will reach the limit of the Bensing Automatic Cutter, and we do not think that there will be a machine built for some time to come that will reach the limit of those cutters, for in designing those cutters it was the inventor's intention to build a mechanical device somewhat on the principle of spur gear wheels that would successfully sever the clay columns into the wares desired, no matter at what speed the auger machine would form and force it through the die. That he has accomplished his end of the work has so far not been denied by any successful brick manufacturer, and do not think that Mr. Blair would have any kick coming should he have one of the Bensing Automatic Cutters installed in his plant. At Mr. Blair's rate of 500 brick per minute, there would be 30,000 brick per hour. Running at 10 hours per day, would be 300,000 brick per day. Cutting the brick off at a thickness of three inches each it would make a column of brick, say 4½ by 9 inches, about 14 and one-fifth miles in length.

The average weight of clay per brick, 8 pounds, would be 2,400,000 lbs. or 1,200 ton of clay. Forty-eight car loads of clay at 25 tons each, or 300 wagon loads at 4 tons each, and as our friend Blair intends to exceed that speed of manufacture, I for one have no idea where the gentleman wishes to place the limit. I, for my part, would think that his desires make a bachelor feel like getting married, so that his offspring could see him accomplish his ends.

Jacob Bensing.

An Old Time "Missionary" Now Located at Cleveland.

Friend Randall:—

The non-attendance of the writer at the last two annual meetings of the N. B. M. A., I learn has greatly excited the curiosity of former acquaintances and numerous inquiries have been made relative to the whereabouts of the "Old Veteran." For the information of any and all my old time friends, will say that I am still on deck and although I am not doing business at the old stand, I am doing business just the same. On the 31st of December, 1904, I severed my connection with my old company and embarked in a new line, which is entirely foreign to that of brick drying, and am permanently located in the City of Cleveland, Ohio. I trust that this explanation will allay any anxiety my friends may have regarding my whereabouts and also allay any fears they may have entertained relative to my physical condition. With personal regards and kind remembrance to your office associates and all inquiring friends, I am,

Sincerely yours,

Cleveland, March 27th. John McKay.

DRYING BRICK WITHOUT A DRYER.

WHENEVER A PATENTED device or process has been made a success, someone is sure to say that it is not new, and to cite previous attempts to accomplish the same thing, raking up old patents covering some portion of the successful patentee's claims, but which are not and never were of any practical value, except perhaps in furnishing an idea to someone for further development. In the April number of "Brick" appeared an advertisement headed "Warning," which is of this nature, and which is evidently intended to frighten those who have bought or who contemplate buying the Scott System of handling and drying brick. The same advertisement will doubtless be inserted in THE CLAY-WORKER, and our friends will expect us to make some explanation of the matter.

It is true that drying brick in the kiln has been the subject of two previous patents, that of Lichtenstadt, No. 323,680, granted September 8, 1885 (expired), and of Kinzel, No. 485,199, granted November 1, 1892. Webb, McClung & Baker, Knoxville, Tenn., are the attorneys for J. C. Kinzel and J. S. Krauss, the men who publish the "warning." These attorneys have taken this matter up with us and have sent us a letter from C. A. Snow & Co., attorneys and counselors in Patent Cases, Washington, D. C., and the best answer we can make to Kinzel and Krauss is to quote from this letter the opinion of this high authority, whom they have consulted:

Washington, D. C., March 3, 1906.

J. C. Kinzel Kiln Drying Co.,
Knoxville, Tenn.

Gentlemen: We have carefully reviewed the Kinzel patent No. 485,199, granted November 1, 1892, and have considered it in connection with the patent of Lichtenstadt, No. 325,680, granted Sept. 8, 1885, (expired), and we find that the scope of your patent is such as to protect you in the operation of coursing green bricks and capping the layers to spread the heat. You cannot prevent anyone else from coursing bricks for drying purposes in a kiln, provided they do not cover the courses with a cap to spread the heat, but in our opinion you can prevent anyone else from coursing bricks in this way and successively applying a cap or plate of any kind whatsoever for the purpose of distributing the heat during the drying operation, which, as explained in your patent, is accomplished successfully with reference to different courses or sets of courses of the green brick.

The patent of Lichtenstadt discloses and covers broadly the idea of coursing green brick and drying sets of these courses successfully before imposing other courses, so that the last applied course or set of courses may have sufficient strength to support the courses thereon. Therefore this feature of coursing successfully the bricks of each day's work is public property and anyone may use it."

The Kinzel patent contains but a single valid claim, that of covering the layers of brick with metallic coverings, and reads as follows:

"A method of drying and burning brick, which consists in first coursing green, undried brick in horizontal courses in a kiln to form a layer thereof; capping the layer with metalic coverings to spread the heat; firing the kiln; then after the first layer is dried, removing the said metalic covering; and successively coursing and capping separate layers of green undried brick upon the last-dried layer until the operation is complete, substantially as set forth."

Now it is fair to suppose that Kinzel and Krauss do not know that the Scott Kiln-Drying Company do not use metallic coverings, or any coverings on the top of the brick. It is true that this was tried by Mr. Scott, and in a perfectly legitimate way, but was found to be a failure by reason of the condensations upon the metallic coverings. The new edition of our pamphlet does not describe or illustrate any metallic coverings. We have devised a better way of doing this and no one need fear infringement of the Kinzel patent. Our patents have just been issued, and ample protection is guaranteed to all users of the Scott system. We have made a success of drying brick in kilns and are the only ones that have ever made a success of this. Others, like Kinzel, have tried it, and are naturally jealous of our success. We are also making a success of introducing the Scott system. We make contracts for this system about every week, and in almost every case with those who have gone to Knoxville and seen the system in operation.

A good thing always arouses jealousy and envy. We expect it. We are prepared for it. The Scott system will take the lead. No other system of brick manufacture can compare with it for efficency and economy. Let us show you. The Scott Kiln-Drying Co.

See advertisement on page 683.

Sand-Lime Bricks—Mr. H. Schon reviews sand-lime brick in comparison with the mortars which were used in buildings centuries old. The clay bricks were used with the same, and with a sand-lime mortars as binder have stood the weather for ages. Now that the production of mortar brick in the style of sand-lime bricks have made their appearance every clayworker is up in arms in regard to this question. He advises the clayworkers to bury the hatchet, and make friends with the sand-lime brick manufacturers and work hand in hand in order to maintain prices. He also states that the sand-lime brick manufacturers have enough troubles of their own, and possibly in a measure as many as the clayworkers. We find in the market good and poor clay bricks, and we find also good and poor sand-lime bricks. The buildings of sand-lime bricks which were erected 8 and 10 years ago,, have stood the tests so far very well, and the main point which the contractors and builder have to look out for is that they use good sand-lime bricks and also good clay bricks in order to give both industries a good showing.—Tonind Z. No. 14. 1906.

Written for The Clay-Worker.

WITH THE CLEVELAND BRICKMAKERS.

CONDITIONS in the brick and building trade in Cleveland are very reassuring. April 1 has come and gone and no strikes have been declared. While one small cloud still appears upon the horizon, it is not likely to assume alarming proportions. All of the trades unions have given contractors the assurance that the men will labor through this year without any disturbance of conditions resulting.

Building operations, which were held up for a few days in February, are once more in full swing. All the big structures which were started during the winter are well under way, while scores of other buildings are being planned.

The annual report of the city's building inspector shows 4,976 permits for buildings, costing $9,777,145, were issued during the past year. That this year's work will exceed that, is now prophesied. The highest previous record is $6,550,000. During the first week in April, eighty building permits were taken out.

The style of building finding the most favor for large structure is steel skeleton, with pressed brick walls and common brick lining. A majority of the large buildings are being erected after this fashion. For stores and dwellings the pressed and common brick are used most extensively.

Brick plants throughout this vicinity are hard at work turning out brick to meet the demand. The common brickyards are disposing of all they can make, and the paving brick and pressed brick establishments are also filling up with orders.

Paving brick contractors are wondering just what will happen in Cleveland if the council decides to accept a recommendation of the city solicitor that the city do its own paving, instead of by contract.

"It isn't legal under the State law," explained Charles Deckman, of the Malvern Clay Co., "but that doesn't make any difference in Cleveland, you know. They do things anyway, whether they are legal or not."

Nothing will come of the agitation this year, as contracts are all let. Paving started on April 1, and by the middle of the month will be in full swing. Last year 28 miles of pavements were laid, 23 miles being brick. This year the city expects to lay even more than that amount of brick pavements.

The brickmakers' trade school is booming along and in a few weeks about fifty "graduates" will be ready to go to work. The local bricklayers' union has been asked to assist with the school but has refused. Labor men say that if the contractors give the graduates a preference over regular apprentices there will be a strike of union men. It is said at the Cleveland Builders' Exchange that in the event of the bricklayers' school proving the success it is expected to be, that various other trade schools will be started. The Carpenters and Contractors Association already has the matter under consideration. The unions will not allow the graduates of the schools to join unless they serve the regular four years' apprenticeship, and trouble is in sight.

A decided innovation has been tried in several brick plants near Cleveland in the introduction of natural gas for burning and power purposes. The latest plant to be equipped with gas is the Eggers Brick Company's plant. The Ohio Gas Co. has installed the service. While the gas is said to be about as expensive as coal, it is found that much finer work can be accomplished in the matter of coloring the bricks, as the gas can be regulated much better than coal. Another plant at Akron is working with gas. It is probable that the pressed brick companies in the vicinity of Cleveland will experiment with the use of gas. It is said that very pretty color effects can be secured with gas which cannot be gotten with coal.

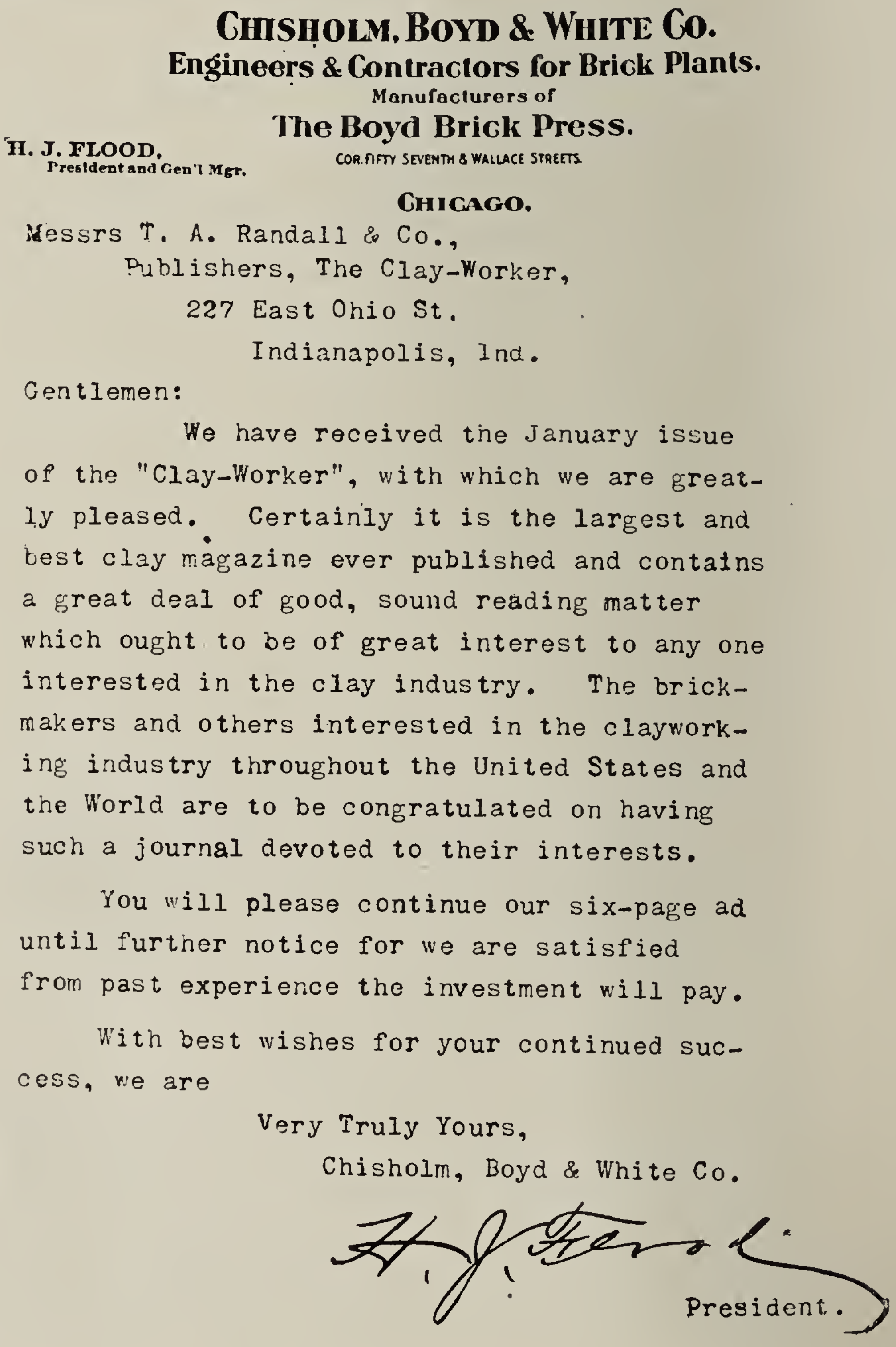
The town of Alliance, O., has a new brick plant, known as the Alliance Clay Product Co. It is capitalized at $50,000 and backed by local men. The plant is said to have a capacity of 50,000 brick per day. The town has a 12,000 population and the plant will meet the local supply very nicely.

The Malvern Brick Company, Charles Deckman, manager, has erected a new addition and installed new machinery at a cost of $5,000 and is busy operating it for the spring trade. A new brick machine and an automatic cut-off table with other pieces of necessary machinery were installed.

Buckeye.

The Voice of Experience.

The following letter is self-explanatory and is very gratifying, both in the frankness of statement and the fact that it was wholly unsolicited. It is the voice of experience and so is of great interest to inexperienced advertisers in the clay field.



CHISHOLM, BOYD & WHITE CO.
Engineers & Contractors for Brick Plants.
Manufacturers of
The Boyd Brick Press.
H. J. FLOOD,
President and Gen'l Mgr.
COR. FIFTY SEVENTH & WALLACE STREETS.
CHICAGO.

Messrs T. A. Randall & Co.,
Publishers, The Clay-Worker,
227 East Ohio St.
Indianapolis, Ind.

Gentlemen:

We have received the January issue of the "Clay-Worker", with which we are greatly pleased. Certainly it is the largest and best clay magazine ever published and contains a great deal of good, sound reading matter which ought to be of great interest to any one interested in the clay industry. The brickmakers and others interested in the clayworking industry throughout the United States and the World are to be congratulated on having such a journal devoted to their interests.

You will please continue our six-page ad until further notice for we are satisfied from past experience the investment will pay.

With best wishes for your continued success, we are

Very Truly Yours,
Chisholm, Boyd & White Co.
H. J. Flood
President.

Written for The Clay-Worker.

THE PACIFIC NORTHWEST CLAYWORKERS' ASSOCIATION.

PURSUANT to a call issued by Mr. G. W. McDowell, of Portland, representatives of the leading clayworking firms of Oregon and the adjoining States gathered at Portland, February 26th, and formed an association to be known as the Pacific Northwest Clayworkers' Association of America. The following officers were elected: President, A. M. Smith, Portland; first vice-president, R. P. Bradley, Tacoma; second vice-president, L. L. Haines, Lewiston, Idaho; third vice-president, L. E. Kern, Portland; treasurer, G. W. Bates, Portland; secretary,, Frank A. Lathrop, Portland. The Executive Committee consists of these officers and J. R. Miller, Seattle; J. H. Spear, Spokane, and W. F. Hidden, Vancouver. The objects of the Association as set forth in the Constitution which in all essentials is identical with that of the National Association, are as follows:

First—To promote the interests of those engaged in the manufacture of brick, tile, pottery and other clay products by the discussion of all subjects pertaining thereto.

Second—To establish and maintain more intimate and friendly relations between clayworkers throughout the Pacific Northwest.

A copy of the Constitution adopted can be obtained on application to the Secretary. Special committees to consider uniformity in sizes of products, railroad rates, and tile drainage, were appointed and instructed to report at a subsequent meeting. We congratulate the clayworkers of the Northwest on getting together in this way. The credit for the move is due largely to G. W. McDowell, of Portland, who issued the call after consulting with Victor Randles, of the brickmaking firm of Randles & Kinsey, of Portland, and other prominent clayworkers there, whose names are included among the officers elected. The trade press was recognized and complimented by being made honorary members, for which the Clay-Worker, on its part, returns thanks.

Clayworkers of the Pacific Northwest in Convention at Portland, Oregon.

BUILDING PROJECTS IN NEW YORK.

A RECENT examination of the building projects filed in New York City show that the proposed constructive work is much larger than has been stated. From Cortlandt street south to the Battery, contracts are pending for some large structures. The steel tonnage required is over 125,000. The McAdoo tunnel projects have recently acquired additional real estate, which increases the steel tonnage to be used by them to something over 10,000 additional tons. The present contracts call for substantially 50,000 tons of fabricated steel. This means an enormous quantity of bricks before the work is completed. One large building will require 12,000 tons, and the enlargement of another will consume 12,000 more.

The New York World building is to be remodeled. The present dome will be taken down and a building erected in the rear of the present one which will consume 15,000 tons of steel. The Trinity building is to be enlarged to twice its present size and will consume about 12,000 tons of steel. The American Express Company is going to want about 10,000 tons.

North of Cortlandt street the plans call for more than 500,000 tons of fabricated steel. The fact that so much steel will be required is indicative of the quantity of brick which will be used. The market will be larger and more active than ever before, while the outlook favors a good supply. Where such immense building contracts are involved, the question of expense, be the brick high or low, unless makers' demands were exorbitant, would carry little weight. Brick is really the only material which can be used to good advantage in these buildings, and the market has been greatly benefited already by the announcement of these contracts. The projects which will require brick are much more extensive than was at first deemed probable, and the situation as regards the proper quantity of brick grows daily more acute. Where they are all coming from is a question which is difficult to answer, but it certainly means that the yards everywhere within reach of New York will be kept busy satisfying the demand.

Written for The Clay-Worker.

ST. LOUIS BRICK AND BUILDING SITUATION.

"Meet me in St. Louie, Louie,
In nineteen hundred seven;
There we'll have a stein or two,
And maybe ten or eleven.
And bring your wives and cousins,
And your children by the dozens;
But meet me in St. Louie, Louie,
In nineteen hundred seven."
Peter B. Gibson.

THE BRICK MANUFACTURERS say business is excellent and that it will continue. The strike, instead of hurting them, really benefitted them. Had it not occurred, the demand for brick would have been so great that they would not have been able to supply the demand. As it is, they have a good steady demand for every one they turn out, and are not rushed.

Many kinds of building materials are higher than they were a few months ago, and it looks as if they would continue to advance. The price of labor, while it has not kept pace with the cost of materials, has also increased.

While this extra cost has had no detrimental effect upon the erection of downtown building blocks, nor any considerable influence in diminishing the construction of apartment houses and flats in the residence sections of the city, it has had a decided effect in abating the erection of homes.

Several builders have even advised their clients who contemplated erecting homes to delay building until the cost of materials should have come down somewhat.

Bricks are about the only material that have not been advanced to any extent. Prices are now as follows: Merchantable, $8.50; ordinary hard and red, $8.75; and strictly hard and red, $9.00. This is only an advance of about 50 cents over several years ago. Lumber since January has advanced in price considerably; structural iron, 15 per cent.; window glass, about 10 per cent.; mill work, about 30 per cent., and cement something like one dollar a barrel.

The building commissioner's report for March shows a big falling off as compared with March of last year. There was a falling off of 155 in the number of permits compared with the number issued in the corresponding month a year ago, and $1,073,080 in the estimated cost of building operations proper.

Prolonged labor controversies which have raged during March are assigned as a principal cause for the poor showing. The unstable weather during the month is another reason.

The total number of building permits follows:

For new brick, 233; for alterations, repairs and additions to brick buildings, 120; new frame, 251; alterations, repairs and additions to frame buildings, 65; total, 669.

For the month of March, 1905, the number of permits issued were 338, 156, 392 and 94 respectively, a total of 980.

The estimated cost of new brick buildings for which permits were issued follows:

March, 1906, $1,707,398; 1905, $2,650,601; alterations, repairs and additions to brick buildings, 1906, $167,375; 1905, $258,245; new frame buildings, 1906, $50,811; 1905, $82,229; alterations, repairs and additions to frame buildings, 1906, $7,842; 1905, $15,341. The total estimated cost of alterations, repairs and additions to all classes of buildings and repairs for which permits were issued were: March, 1906, $1,933,336; 1905, $3,006,416.

The building commissioner says he does not consider the report as an indication of the season's work in the building line, as there are a large number of plans being drawn by architects for which permits will be asked during April.

Application for a permit to erect a 10-story fireproof hotel at Eighteenth street and Washington avenue was filed with the building commissioner last week by the Marquette Realty Co. The building is to contain 356 rooms, and the estimated cost of the structure is $366,000. The greater amount of the stock in the enterprise is said to have been subscribed for by Washington avenue wholesale merchants.

One looking over the records finds that comparatively few permits were issued for dwellings, flats, and other small buildings which could be delayed. Most of the permits were for buildings which had to be pushed in spite of discouraging conditions.

The Festus, Mo., Pressed Brick Company was incorporated recently with a capital stock of $15,000. The incorporators are: Charles E. Miller, R. F. Berry, F. W. Brickly and others.

The Modern Roofing Tile Company, which has a plant at Prospect Hill, St. Louis County, filed articles of incorporation recently. The capital stock is $100,000, of which $68,000 is paid. Some of the stockholders are: John C. Sharp, of Chicago, Ill., 1,755 shares; Leslie G. Sharp, of Chicago, Ill., 200 shares, and Edmund C. Hoelsche, of St. Louis, 40.

The Kloess Brick Company, of Belleville, Ill., has filed notice of a decrease in its capital stock. The capital is reduced from $70,000 to $21,000.

The Charles T. Hicks Clay Co., of Drake, Ill., was incorporated early in April with a capital stock of $20,000. The company proposes to manufacture clay products. The incorporators are Charles T. Hicks, William S. Porter and John C. McGrath.

A leading contractor says that because of the bitter controversy between warring labor factions in St. Louis a project to erect a large building in the heart of the downtown district at a cost of $1,500,000 has been practically abandoned.

Continuing, he says: "Both sides in the labor controversies seem determined to hold to their positions in the matter, and as a result, grave fears as to the outcome exist in the minds of investors. I believe that the labor situation will continue to be critical the next sixty days. I, my self, have lost much time in the last few weeks receiving labor delegations in vain efforts to effect a solution of the difficulty. I am unable to obtain bricklayers on any of my contracts because of the existing condition."

He said that only recently he was obliged to turn over the Frisco building annex, for which he had the contract, to the owners for completion, and they secured the masons and workmen to complete the structure.

Another contractor says: "If the labor troubles shall be adjudicated soon to the reasonable satisfaction of the employers and their employes, the strike condition will not have caused any material damage to the progress of building in St. Louis. The delay so far has been the result more of bad weather than of any other cause, and I will predict that the greatest trouble will have been settled when the weather conditions are such as to permit work to go on."

St. Louis, Mo. A. Saint.

In a recent letter, the American Blower Company, Detroit, Mich., says, "We have recently received orders for the installation of a waste heat system from the following companies: Darlington (S. C.) Brick Company; Nansemond River Brick and Tile Company, Norfolk, Va.; Omaha Hydraulic Pressed Brick Company, Avery, Neb; and the Ittner Brick Company, Belleville, Ill. The latter company in placing the order, wrote us as follows:

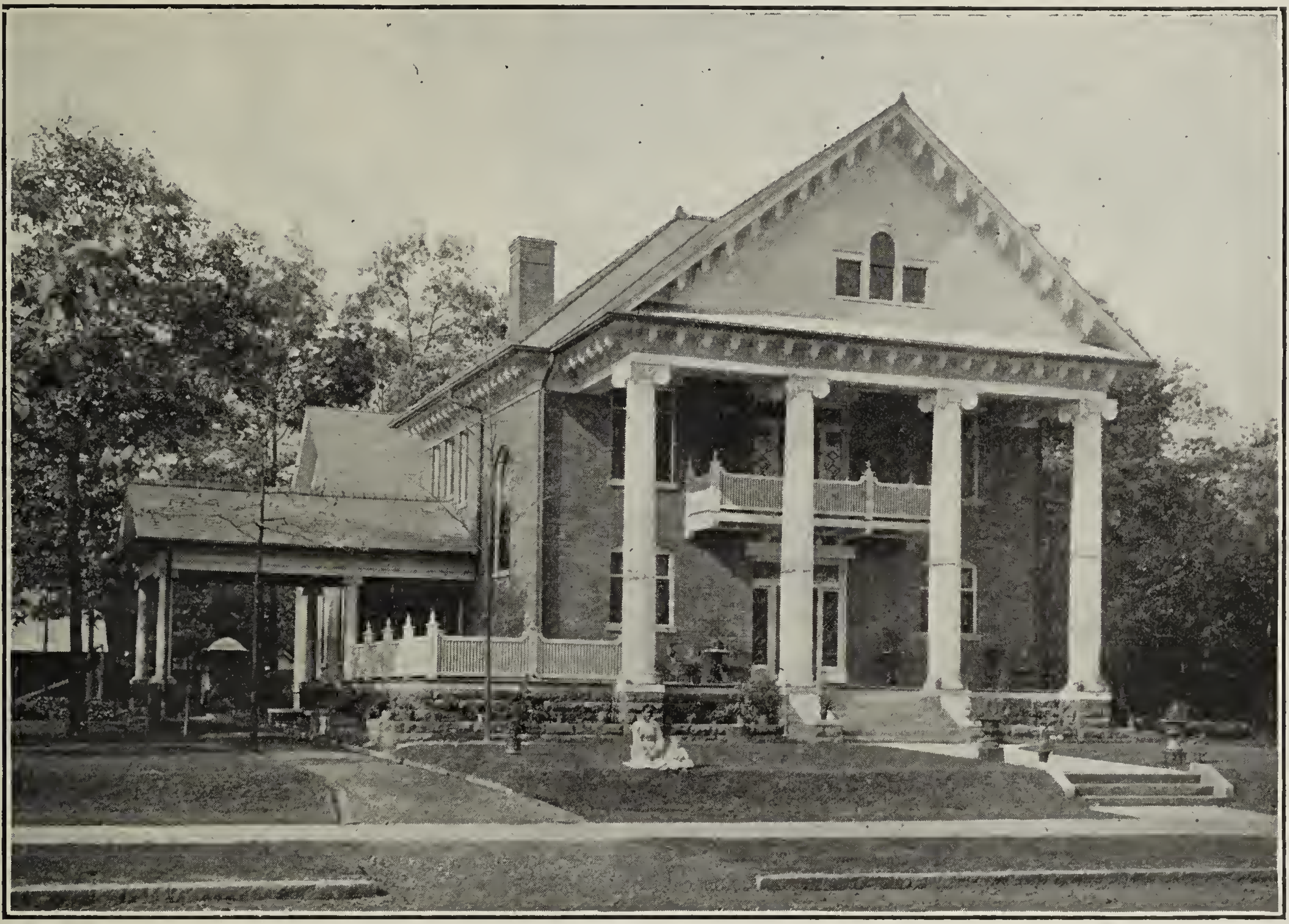
"We award you this contract after competitive bids, not because you are the cheapest bidder, but because a similar outfit purchased from you two years ago has given us such excellent service, that we feel if we get the same excellence in this, that it will prove cheapest in the end."

Written for The Clay-Worker.

WAY DOWN SOUTH IN DIXIE.

Busy Southern Brickmakers — Louisiana Clayworkers Form a State Association — D. V. Purington Finds Health and Pleasure at Ocean Springs, Miss.

ONE DAY IN March, when Central Indiana was covered fourteen inches deep with snow the heaviest fall of the "beautiful" that this section has seen for several winters the writer, with two encumbrances of the feminine gender, left the Hoosier capital for a two week's trip South. At Cincinnati the "beautiful" had thinned considerably and soon after we had crossed the Ohio River, in years past known as Mason's and Dixon's line, signs of winter disappeared wholly from the general landscape as viewed from the car windows. At Chattanooga, the following morning we breathed the atmosphere of springtime, and it did taste good.



New Brick Home of J. R. Copeland, President N. B. M. A., Birmingham, Ala.

At Birmingham, we stopped for a day to visit with those who made the 1905 National Convention a memorable event in the history of the N. B. M. A. We found brickmakers Copeland, Stephenson, Robertson, Simms, Sibley and others, busy and happy. We were shown the excavations for the new hotel, where they hope to take even better care of the convention next time they are given a chance, and some new skyscrapers in varying stages of erection. Truly Birmingham is wondrous prosperous these days, the result of the convention, and other good influences they say. Mr. Simms, who has his hand on the wheel of the good ship Brick, admitted that the past year was the best in the history of the Iron City, and predicted that 1906 would top it considerably in the volume and value of building.

President J. W. Copeland is happy in the possession of a new home, a beautiful dwelling built of his own brick, out in the hill top section where upon the wide veranda, surrounded by great forest trees, he can sit in the cool, and dandle the youngest Copeland on his knee. It was the arrival of this youngster which kept Mrs. Copeland from the Philadelphia meeting.

The accompanying view of the Copeland home, while it gives an idea of its beauty cannot convey to the eye the pleasing color effect of the rough red brick of which it is built. Mr. Copeland not only used his common end-cut brick for all the exterior walls, but took pains to see that unselected run-of-kiln brick were used for the express purpose of obtaining a rough, rather than a smooth, surface. The effect is very pleasing, so much so that we predict the Copeland residence will be copied by many home builders of that section.

National Treasurer John W. Sibley is also happy, being again knee-deep in the front brick business, his new pressed brick plant being now in full operation. There is displayed in his office a line of buff, spotted, and red shale brick of a quality which insure the success of the Sibley-Menge Press Brick Company. Though they were taken from the first kiln burned, they are excellent both in color and texture. The plant is located at Warrior, near the old Coaldale paving brick plant, with which Mr. Sibley was connected for a number of years. That section is rich in shales and clays of varying grades, so "Master John," with his modern plant, can supply the builders of the South in the years to come, with high grade front and ornamental brick of the highest with high grade front and ornamental brick of unsurpassed quality. A detailed description of the factory, which is in issue of The Clay-Worker.

Another night's journey Southward on the Queen & Crescent Line, and we look out upon green fields and blossoming trees, a marked contrast to snow-bound Indiana which we had left but a day or two before. The great brick and lumber plant of Salmen Brothers at Slidell is located on the Q. & C. Line and as we passed it the smoke curling up from its stacks and kilns told that it was in full operation. It is no trouble to run the year around in this sunny clime where clay pits are never frozen and the touch of Jack Frost is seldom or never felt.

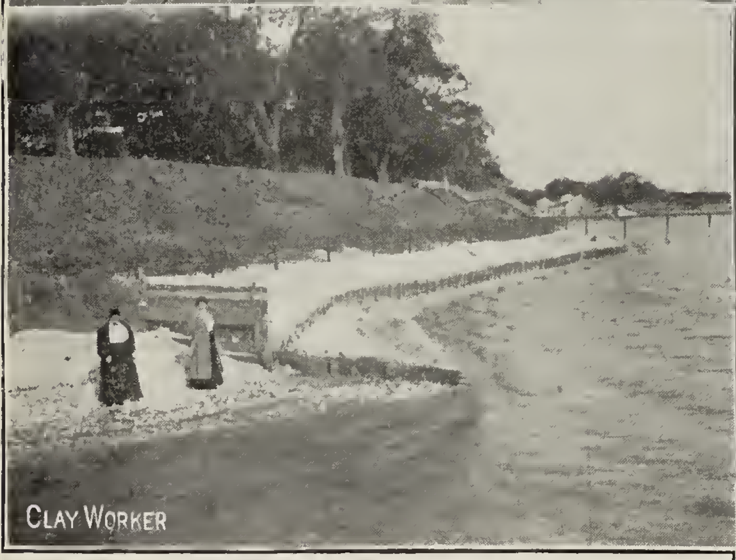
Louisiana Clayworkers Form a State Association.

March 30th was a red letter day for the brick manufacturers of Southern Louisiana and Mississippi, for on that date there was a meeting at the St. Charles Hotel, New Orleans, and preliminary steps were taken for the organization of a State or Tri-State Association of Clayworkers.

The Pagoda Overlooking the Bay.

Wyndillhurst, as Seen from the Pier.

A Mighty Live Oak, Sixty Foot Spread.



A Bit of the Oyster Shell Water Break.

Mr. Purington and Boatman, "Coco" Ryan.

A Section of One of Biloxi's Brick Streets.

The meeting was called by Messrs. Salmen and Bethune, of that city, and J. N. Adams of Alexandria, who from their membership in the National Association realized the benefits to be derived from such associations.

The prime object of the meeting was to secure the standardizing of the size of building brick in that section, and this will be accomplished for all the firms represented, including some thirty representative manufacturers, voted unanimously to adopt the N. B. M. A. standard size, viz., 8½ x 4 x 2¼ inches. It was also unanimously resolved to extend an invitation to the National Association to meet in New Orleans. National Secretary Randall, who was present by request, was made an honorary member of the Association and tendered a vote of thanks for the assistance rendered in forming the State Association. There were in attendance a few Texas and Mississippi manufacturers who favored the establishing of a tri-State Association with regular annual or semi-annual meetings. These matters were left, to be further considered by the Executive Committee, composed of the following officers: President, Fritz Salmen, Slidell, La.; Vice-president, C. N. Adams, Alexandria, La.; Secretary-Treasurer, Frank Bethune, New Orleans, La.

There is a building boom on at New Orleans, a large number of immense buildings are being started and the demand for brick will undoubtedly keep all the yards in that section running to their full capacity throughout the year. Notwithstanding this, prices will probably remain normal, common building brick selling for $7.50 to $8.50 per thousand. Most of the brick sold within the city are furnished by the Mutual Brick & Supply Company, of which Mr. Bethune is manager and treasurer. The company handles the output of nine yards with a total output of 40,000,000 brick per annum. Mr. J. A. Blaffer, who was formerly the leading manufacturer of brick in that section has retired from active business. He is hale and hearty, takes a keen interest in public affairs and is always pleased to meet and greet members of the N. B. M. A., particularly the old-time members with whom he was associated in the early days of that organization.

At Wyndillhurst, Purington's Winter Home.

The objective point of our trip was Ocean Springs, Miss., an ancient hamlet on the Gulf Coast, midway between New Orleans and Mobile. As most of the readers of the Clay-Worker are doubtless aware, the Gulf Coast between those cities is dotted with the beautiful and palatial summer homes of the wealthy merchants and business men of that section. Here, too, of late years have been wont to come the idle pleasure and health seekers of the North, during the winter months. The mild climate, salubrious atmosphere and pure artesian waters together with the fishing, boating and hunting privileges making it both a charming and health-giving haven of rest for fagged mortals.

While not so widely known perhaps as Biloxi and Pass Christian, Ocean Springs is by no means a new discovery. On the contrary, it is somewhat ancient for an American health resort, and many of the plantations thereabouts flourished in ante-bellum times—"befo' de wa'." D. V. Purington has purchased one of the finest and most interesting old-time places on the coast and will spend the balance of his winters there, and they will be many, from present indications, for he has regained his old-time health and vigor. The fountain of youth may be a myth, but the Puringtons certainly have found at "Wyndillhurst" an Eden in which there are no worries, no rheumatic twinges, no fretful hurrying or scurrying, but instead life flows on as serenely restful as the summer sky above.

Mr. Purington has the reputation of being a "lucky fellow," and he sure was lucky when he cast his lot at Ocean Springs. While his days there are peaceful, they are by no means idle. From early morn, when he unfurls Old Glory to the wind from the flag staff which he himself erected, till sunset, when he carefully hauls it down, his every hour is occupied. There are flowers to water, leaves to rake, roses to pluck, and bait to secure for the day's fishing. Then there are the boats to care for, the latter lie near the end of an eight hundred foot pier, where Mr. Purington may often be seen, rod in hand, angling for trout which he lands frequently, and for variety, there is occasionally added a flounder, a sheephead, a red fish, a mullet, a topsail cat, or an eel, to say nothing of sea bass, and minor fry too numerous to mention.

He is not only becoming expert in piscatorial sports, but as well as an antiquarian. Among other interesting things, he has discovered that the first Confederate money issued "during the late unpleasantness" was made in the very house in which he now lives. In this connection, it may be well to relate that Biloxi, which is but an hour's sail across the bay, is supposed to be the second oldest city in the United States. There is an hourly train service between the two cities, known locally as the "Interruption" Railway, so that when wind and tide are unfavorable to fishing one may easily run over to Biloxi, visit with Ohr, the potter, whose "no-two-pieces-alike" ware has made Biloxi famous, or, as we did on one occasion, drive down the famous shellroad to Beauvoir, the home of Jefferson Davis at the time war was declared. It is now the property of the State, and is used as a home for disabled Confederate veterans. It is a beautiful, picturesque place where the veterans find rest and comfort in their declining years.

As might be expected, Mr. Purington has also discovered a brickyard, not an ancient one, but a modern stiff-clay plant erected a year or two since. It is located a few miles up the bay and was not in operation at the time we were there, else we should have visited it. Biloxi also has a mile or two of paved streets, which is a source of consolation to D. V., and he is wont to stop and inspect it during his occasional trips to the city with as much interest as though it was made of Galesburg, instead of Ohio pavers.

Next to its flowing springs and artesian wells, the most important product of Ocean Springs and the adjoining gulfports, is the oyster, and it will not surprise us if we return to Wyndillhurst a year hence to find that Mr. Purington has added to his other accomplishments, that of the art of "tonging" the succulent bivalve, for he has valuable oyster beds upon his own property. They are gathered in such vast quantities in these parts that the accumulation of shells form little mountains all along the Coast line, notwithstanding the fact that they are carried away by the train loads for road building purposes.

To Northerners, the most charming features of these Gulf plantations are the great forest trees with their fantastic festoons of southern moss, the profusion of wild flowers, and great number and variety of birds. The latter literally fill the air with melody, particularly is this true during the morning hours. We will never forget our first morning's awakening at Wyndillhurst. We have suspected since then that D. V., had on that occasion arranged for a special bird chorus for our benefit, at any rate we were charmed by the chorus and particularly by the sweet notes of a robin which rang out clear and distinct above all the rest. Our joy was lessened not one whit to find later that our robin was a mocking bird. The latter are as common there as are sparrows in the North, and their sweet songs, as varying as if each represented an entirely different specie, are heard throughout the day. The old song, "Oh, listen to the mocking bird" has a significance to us now that we never knew before. Mr. Purington's special pride is a great live-oak tree which has a spread of sixty feet, and there are many similar monarchs of the forest upon his and adjoining plantations. Mr. Purington and his better half expect to return to their Chicago home about May first, and D. V's. splendid physical condition will be a most agreeable surprise to his host of friends there.

Returning Northward, a stop at Mobile afforded an ocular demonstration that that old city, too, is growing apace. Many new buildings are under way and we are pleased to note that they were being constructed almost exclusively of brick. The South is generally very prosperous, and the clayworkers are doing their full share in the great work of building that is going on throughout "Dixie Land."

Walter P. Grath, general manager of the Illinois Supply and Construction Company, St. Louis, Mo., writes that in addition to having a good demand for their full size machines, the company has lately filled a number of orders for working models of the Grath special hand-power press, including one one-half size model press for making briquettes four and one-half inches long by two and one-fourth inches wide by one and one-half inches thick, with name plate attached to die plates, for the Blue Ridge Enamel Brick Co., Newark, N. J.; one and one-half size press for making briquettes four by one by one and one-half inches for Prof. Edward Orton, Ohio State University, Columbus, Ohio; one one-four size press for making domino brick two and one-fourth by one and one-eighth by one-half inches, for A. C. Ochs, Springfield, Minn.; one one-fourth size press for making sand lime briquettes, two and one-eighth by one by one-sixteenth, for the Diamond Stone Brick Co., Wilmington, Del. These one-fourth and one-half size presses, Mr. Grath states are especially adapted for testing clays and also for making samples for architects who will use them as paper weights, and the product is equal to that made on any large steam power press and has the same appearance. The brick turned out have perfect edges and corners with a polished face free from granulation.

Written for The Clay-Worker.

KANSAS CITY BRICK AND BUILDING NEWS.

LAST MONTH was a very bad one for building operations in this city, as all the bad weather of the entire winter was saved up and dumped into March. The result was the holding off of much work which it was expected to start early this spring, but while the work has been delayed, none of it will be delayed for any length of time. Taking the past winter all the way through, it was especially favorable for building operations, and more days work was done than usual for the season. The dealers in builders' supplies have been busy right along through the dull months, in fact they have had no dull months.

The building permits for the month of March numbered 297, of which 29 were for brick buildings, the total value of which is given at $479,750, while the total value of permits for the month was $895,345.

There is no question about the demand for brick in this city this year. It is going to be very heavy, especially for Kansas gas-burned brick, as they are being generally specified by architects, and are generally liked by contractors, a much larger percentage of them showing up to be first class brick, and a very light percentage of bats. The only question now before the brick men is, how much they will make on the brick sold here. The market is assured, plenty can be sold, now will the manufacturers sell them for no profit, or will they demand a fair profit on them? The chances are that most of the plants will sell brick entirely too close, and this will be forced on them by the more favorably located plants. There is said to be a difference of at least $1.00 per 1,000 in the cost of manufacturing brick in the gas belt, according to the location and up-to-dateness of the plants, and as long as this difference exists the plants which can manufacture at a profit at $1.00 less per 1,000, will always be able to make a profit which is satisfactory, even without letting their more unfortunate competitors make a cent. The question is, will they be willing

All these prices were to have been regulated by the great Kansas brick trust, which has had an option on all the plants in that State, many in Missouri and some in Iowa and Nebraska for a number of months. The option was allowed to expire the first of this month, however, and each plant now figures on paddling its own way through the sea of competition.

A new problem is confronting the brick men who are using coal for operating their yards, for a continuation of the coal strike will put them out of business at the time they usually begin to be the busiest. It is generally thought that the coal strike will not last over thirty days, however, as some of the operators are now signing the new scale, and it is hardly probable that the other operators will allow them to get all the business, when they can add the additional cost of labor to the price per ton, and make the consumer pay the bill. One feature of the strike in the Southwest which does not apply to other parts of the country is the fact that it is driving steam coal consumers to the use of gas or oil for producing steam.

The Pittsburg Brick Co. is reporting a big demand for its paving blocks from Southern cities. Mr. Nesch, the general manager, states that there is every indication that a good many of the municipalities are beginning to wake up to the fact that they must get in their orders early, if they are going to pave in the best months of the year, and they are buying now, instead of waiting until late in the summer or early fall, and expecting deliveries to be made within a week after they finally make up their minds to pave. When cities learn that it takes time to make brick, and order in time to do their paving in good weather, they will have made a long step in advance of past conditions.

The Dwyer Brick Co., which is independent of the coal strike, on account of burning natural gas, has been shut down for a few weeks on account of the bad March weather, but is ready to start up again now.

The Diamond yard of the Kansas City Hydraulic Pressed Brick Co. has already been closed down on account of the lack of coal. Different coal operators are finding that they have some coal to offer to brick yards now, however, and it is likely that enough coal can be found to operate, at a slight advance in prices.

Flanagan Bros. report that they have coal enough on hands to keep their plant running for at least thirty days, and they are having a heavy demand for their product, so they hope by the time their present supply is used they will be able to buy from the re-opened mines.

The Lisle Brick Co. has secured the services of Louis G. Reppell, who has for the past sixteen years been head burner at plant No. 2 of the Kansas City Hydraulic Pressed Brick Co. Mr. Reppell is able to produce the finest quality of brick, and should be a valuable addition to the force of the Lisle yard.

The Eadie Building Supply Co. has secured the contract to furnish 150,000 of the Brazil, Indiana, grey face brick for the new ten-story Scarritt building, and also a number of other contracts, figuring up to about half a million of this kind of brick.

T. N. Atchison, manager of the Malvern Brick and Tile Co., of Perla, Ark., has been in the city this week, looking over prospects. He manufactures fire brick, and a cream-colored vitrified brick, and as he uses wood for fuel he is not worrying about the effect of the coal strike on his business.

K. A. W.

Written for The Clay-Worker.

BRICK AND BUILDING NOTES FROM PITTSBURG AND VICINITY.

THE BUILDING SEASON is now fairly on, and there is every indication that it will be one of the busiest summers that we have had for many years. While the building operations for the year so far have fallen somewhat below the record for last year, this has been caused by unexpected contingencies that were entirely unlooked for, and competent authorities are of the opinion that before the year is over, 1906 will show a material increase over the high record of last year. And this does not seem to be at all unlikely, as there is almost enough work in contemplation even at the present time to fulfill this prophecy.

Locally, the fireproofing and terra cotta departments of the clay industry are in fine condition, large amounts of these materials being used at the present time in the construction of the many large office buildings that are being put up in the city now.

Bids for furnishing approximately 14,000 lineal feet of 12 to 36-inch sewer pipe for the borough of Edgeworth will be received by the engineers, Elliot & Baton, Keystone Building, Pittsburg, until the 12th day of May.

The most important topic in the fire-brick world of the month has been the proposed merger of the independent manufacturers, and this city has been the mecca for many of them for the past few weeks, representatives coming here from all parts of the country. The deal has practically been closed, and it is confidentially stated by those interested that all agreements and contracts will be closed and signed by the time that this edition comes from the press. Appraisers are expected to start out to visit the various factories about the 20th of April, and it is thought that their work will be completed in a very short time. Representatives of the largest independent fire brick interests in the country have been in session, and it is authoratively stated that manufacturers representing a total output of 1,600,000 brick daily will be included in the merger. Among the important concerns that have signed the contracts to join in the new combination are the Joseph Soisson Fire Brick Company, of Connellsville, and one of the oldest and largest concerns in the trade; the Savage Fire Brick Company, which operates plants at Johnstown, Williams, Hyndman and Keystone, Pa.; the Reese-Hammond Fire Brick Co., which has operations at Bolivar and Garfield, Pa., with a total daily capacity of 250,000 pieces; and the Dunbar Fire Brick Co., which, with a number of large interests have large operations in Pennsylvania, Maryland, West Virginia, Ohio and Kentucky. These latter interests represent about 90 per cent. of the independent interests. The new concern will be independent of the Harbison-Walker Refractories Co., but will act in harmony with that corporation in sustaining good trade conditions. The new concern will shortly establish headquarters in Pittsburg, and will be in shape to transact business as a corporation within the next few months. The capitalization has not yet been decided on,

The Waynesburg Brick and Stone Company, of Waynesburg, Pa., has purchased from Charles P. Burke and Albert L. Moredock, a tract of 35 acres of land in Franklin township, and will develop the clay deposits which it contains. The price paid was $13,000.

The Colonial Trust Company, of Pittsburg, has filed a suit in equity against the American Clay Manufacturing Co., asking permission of the Court to foreclose on a mortgage held to secure some bonds.

James A. Ewing, Erneste Bisi and G. P. F. Wilhelm have made application to the Governor of Pennsylvania for a charter for a company to be known as the Walker's Mills Stone and Brick Company. The new company will mine and quarry stone, shale, clay and other minerals of like character, and will manufacture brick, fireproofing, sewer pipe and other products of clay and stone.

Local fire brick manufacturers are kept busy filling orders for coke oven brick, there being an immense amount of this class of refractory material being used in the coke regions around Pittsburg this spring. It is claimed by authorities that there are at least 30,000 new ovens projected for the summer, and that at least ninety per cent. of the brick will be supplied by Pittsburg concerns. This is reasonable, for it is becoming better known every day that the largest concerns in the country are located here, and that this city is fast climbing to the top of the heap, so far as the manufacture of fire brick is concerned. F. A. C.

Written for The Clay-Worker.

NEW YORK AND THE EAST.

NOT MUCH change has been reported in the brick market during the past month. Building operations have been smaller, due to the season, but there has been an unusually large demand and prices have continued high with brick of all grades rather harder to obtain than ordinarily at this season. Conditions are favorable to holders of brick everywhere. The market is firm as quoted and no dealer or manufacturer is ready to make concessions to secure business. In fact, he doesn't have to. There is a sale for all the brick obtainable at the present high range. Under these circumstances it is possible to predict some lively times this spring when building operations begin and the supply of brick runs short, as it is certain to do. Probably not a yard on the Hackensack or the Hudson, and certainly not one in New York City has an adequate supply for even the opening of the regular spring trade. What will happen when business opens is a question which time alone can determine. Prices in New York at present are as follows: Front buffs No.1, $23.00; grays, shaded and speckled, $28.00; white, No. 1, $30.00; Hudson river common, $11.00 @ $12.00; light hard, $9.00 @ $9.50; pale, $8.00; No. 1, fire, American, $8.00; No. 2, $20.00; Scotch, $35.00. The tendency of the market is upward, so far as it shows any tendency now. It is too early yet to have much change made in either demand or prices, but the supply on hand indicates what will happen in the market as soon as there is an increase in demand.

Advices from Boston report that inquiries for brick are increasing every week. All indications point to unusual activity just as soon as spring opens and outdoor work is possible. Prices are held firm on all sorts and grades. Just at present demand promises soon to outstrip supply and a further advance in price seems probable. Stocks in first hands are unquestionably light for the season. Prices are: Common S. S. brick, $9.50 @ $10.00; culled S. S. brick, $10.00 @ $11.00; New Hampshire culled, W. S., $13.00 @ $14.00; light hard, $7.00 @ $8.00; Philadelphia face, $24.00; fire brick, $28.00 @ $35.00.

The Boston tile market is quiet, but there is a fair demand for the season, and the prices are firmly held. The current demand is far ahead of what it generally is at this season, and all persons interested believe that the present movement will shortly materialize into something better in the way of prices. Quotations now are: Partition tiles, 2-inch, 4½ cents per square foot; 4-inch, 6½ cents; 6-inch, 9 cents; hall furrings, 2-inch, 3¾ cents; 3-inch, 4½ cents; roofing blocks, 3-inch, 6½ cents; floor arches, 15-inch, 19 cents; 12-inch, 15 cents; 10-inch, 12 cents; 9-inch, 10 cents; 8-inch, 9 cents; 6-inch, 8 cents.

A better business in drain tiles is expected just as soon as the weather gets mild enough so the work of laying drain can be done on the land. It is only within the past few years that much draining has been done in this way, but recently there has been a good deal of interest taken in this system of drainage. The result is that the market has improved and some of the establishments in the East which make a specialty of drain tile have been obliged to increase their capacity to enable them to fill the orders they receive. There is now a discount from list price of 68 per cent. for car lots of 60 per cent. on lots from store. The supply of the pipe from store is not large, and advancing prices are likely.

Scarcely any other business has the apparent attractiveness which clusters around the clay industry this spring. The number of incorporations is generally taken as an indication of the probabilities of a business. It at least represents what capitalists and others believe it will be able to do. Accordingly the number of incorporations in the clay industry bears some relation to the indicated prosperity of the business the coming season. Probably not all who have taken out charters will ever use them, but that the excellent business of the past few years has caused practical men, and men with capital to invest, to at least investigate the subject, is shown by the number of incorporations, which exceed those of any previous year.

The Board of Public Works has just announced that more paving will be done in Newark, N. J., this spring. Out of about a dozen streets which are to be paved, brick is specified for five of them. The city of Newark, which, by the way, is one of the most important interior cities in the country, has always been partial to brick paving and has some of the best brick paved streets in the East. The work has always been well done, and the residents appear to be entirely satisfied. The engineers have seen that brick were carefully placed and that they were not asked to carry traffic too heavy for them. A certain proportion of new work of this sort is done each year, and brick composes a fair share of it.

The New Jersey Company has incorporated with a capital stock of $1,500,000 to manufacture and deal in brick, tile, pipe and other products of clay. The capital stock is divided into $1,000,000 common and $500,000 preferred, the latter redeemable at 110 any time after the expiration of three years. The incorporators are: Alwyn Ball, Jr., Royal C. Peabody and Walter E. Hope. The registered office is 15 Exchange Place, Jersey City, N. J.

The Rockland county, New York, Grand Jury presented indictments against three brick manufacturers at Haverstraw, N. Y., for destroying highways which resulted in the recent landslide in which twenty lives were lost. The indicted manufacturers are: The Excelsior Brick Co., John Nicholson and John Reilly. It is very difficult to predict how this trial is going. The feeling in and about Haverstraw is strong, chiefly because of a political fight into which some of the manufacturers were drawn without intending to become entangled. Whether this will guarantee them immunity is a question which cannot be decided until after the trial occurs, but for which no date has been set. Burton.

The plant of the Southern Fire Brick and Clay Company, at Hillsdale, Ind., has been purchased by the Thomas Moulding Company, of Chicago, Ill., and will henceforth be run on fire brick and special shape material to its fullest capacity, about 70,000 brick per day. The general office formerly located at Indianapolis, has been removed to 1202 Chamber of Commerce Building, Chicago, Ill.

THE CLAY-WORKER

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TWENTY-THIRD YEAR OF PUBLICATION.

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227-233 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

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CURRENT COMMENT.

It is not enough to do your full duty in this world, you should do it cheerfully.

* * *

Disappointment is like trouble, in that you can generally find it if you go look for it.

* * *

Remind your town promoters that one of the first aids to real estate sales is nice brick paved streets.

* * *

If you have a good foreman, don't spoil him with a check rein, but give him free encouragement and plenty of authority.

* * *

It is said that the auto promotes tobacco chewing. Well, as long as it promotes good roads we are not going to throw any bricks at them.

* * *

One of the refreshing signs of the times is to see in the spring building operations on all sides, a preponderance of brick and clay products.

* * *

The life insurance problem is still being investigated, but we all know the way to settle fire insurance problems is to build fireproof houses.

* * *

Brick might be made the most popular and the most sought building material known. It is for the manufacturers to do this. No one else will.

* * *

The brick manufacturer who doesn't succeed in making good this year must be running an extremely unprofitable plant. It doesn't pay to do any work in a haphazard way. Figure it all out as exactly as you can and then come as near your figures as possible.

* * *

This should be lively days for the clayworking machinery men, and most all of them are live hustlers who will improve each shining moment.

* * *

Are you advertising your business where it will do the most good? Better investigate this question and see just what you are doing. It may result in profitable changes.

* * *

It is pleasant to report that the public which has been suffering somewhat from hollow concreteitis is now in an improved condition and is giving promise of rapid and complete recovery.

* * *

The training school idea is showing signs of growth right along, and with a little more cultivation and fair weather it will soon be a hearty youngster in the educational world that will make itself felt.

A SCARCITY OF LABORERS.

Scarcity of hands is one of the crying needs of the brick industry. It is passing strange, but a leading farmer told the writer substantially the same respecting the supply of farm hands. And the curious part of his statement was that the brick yards in his vicinity attracted all the men because they pay larger wages than farmers can afford to pay. Perhaps the truth of the matter is that the same condition exists in all industries. Business has developed so rapidly during the past few years that it is practically impossible to secure sufficient help.

SAN FRANCISCO OLD AND NEW.

The whole country stands aghast at the dreadful catastrophe that has occurred on the Pacific Coast. The fate of San Francisco is heart rending. The silver lining to the cloud of woe now overhanging that ruined city is the earnest expressions of sympathy from every community in the land and many foreign countries as well, and it is sympathy of a substantial character that will bring, and bring quickly, relief to sufferers and assistance in the great work required to rebuild the city, and Frisco will be rebuilt. The undaunted spirit of American enterprise will rise equal to the emergency, though the task may at first thought seem impossible. The demand upon all sources of information, from relatives and friends for news of a personal character regarding the citizens and visitors in the stricken district, is so great as to forbid any attempt to get details as to the effect upon the clay industries of that section at this writing, but we hope to chronicle subsequently the full particulars. As most of the clayworking plants were located beyond the city limits, we hope that they have escaped serious disaster. One thing may be considered a certainty, and that is that in all the ruins of the city, the one material that may be of great value in rebuilding is the common building brick of clay. May we not hope that new San Francisco will be built chiefly of brick and terra cotta. In the general use of these materials lies a measure of safety, if not immunity, from similar disasters in the future.

TILE DRAINAGE IN GERMANY.

At a farmers' institute held recently in Huntingburg, Indiana, the subject of tile drainage was under discussion. A German who was a stranger to many in the hall arose and said, "A year ago or more, I visited my native land after an absence of many years. I was surprised at the changes that had been wrought in farming in my absence. When I left Germany, when but a boy, the lands in most part level, were plowed up into beds, and the furrows between the lands afforded about all the drainage. On my return, I found that they had been tile draining their land, laying the tile four or five feet deep, and only two or three rods apart. Some of these drained lands had advanced in price to two or three hundred dollars per acre, on account of their better condition for growing big crops." He said further that many of the German farmers were tile draining the hill lands to prevent surface washing, thus saving as well as increasing the fertility by deeper cultivation. He also said, "I come home with more faith in the benefit of draining. I am going to drain some of my hill lands, and I am going to drain deeper and use larger tile and get more air into the ground. They made the same mistake in Germany that we made, that is, they used tile at first that were too small, but they are using large tile now almost double in capacity, compared with the first they used."

THE PROSPECTS FOR THE SEASON.

The representative of a plumbing supply house in Philadelphia who covers a territory from that city through the Northwest to the Pacific Coast, then South to San Francisco, Los Angeles, and again through Southwest, the Southern cities, following through St. Louis, Indianapolis, Pittsburg and to the point beginning, has to say with respect to the building prospects that it is not a prospect at all in the sense of uncertainty. This agent visits the large cities where he has representatives, who cover the smaller markets, and his business at this time of the year is not so much to definitely sell goods as it is to make an estimate on which to base the manufacturers output. He says that the schedule which they will lay out for this year's manufacture for summer and fall distribution will be one-third larger than has ever before been considered in connection with their business. Architects, not alone know the situation with respect to their particular locality, but they get pointers on the building situation from the many agents and demonstrators of various building supply houses. In conversation with architects, we learn that from all sections the indication is for a larger business, involving the use of building materials, than the country has hitherto known. Farthermore, the character of the business is better—it is more substantial; it is made up of larger work as well as a corresponding volume of small undertakings. So far as we can gather from most reliable sources, we judge that this season, notwithstanding the phenomenal record of the last, will probably be the greatest in building operations that has ever been known in the history of this country.

IOWA TO HAVE CLAYWORKING SCHOOL.

J. B. McHose, Boone, Iowa, who has been chairman of a legislative committee of the Iowa Brick and Tile Association, is quite elated over the passage by the Iowa senate, of a bill which provides for the establishment of a course of practical and scientific instruction and investigation in the art of clay working and ceramics including the manufacture and use of cements and allied industries in the Iowa State College, at Ames, Iowa.

The bill had previously passed the house and will become a law upon the signature of the governor.

The bill will mean the establishment of a department of ceramics for the technical and practical education of clay workers, cement manufacturers and users and other allied pursuits in all branches of those arts which exist in Iowa or which can be profitably introduced and maintained in the state from the mineral resources thereof; including the geology and properities of clays, cement, fuels and other minerals required, and the testing of the products thereof; also the manufacture of fire brick, pressed brick, paving brick, and of glazed and enameled brick of all kinds, of sewer pipe, drain tile, fire proofing and terra cotta, of pottery, porcelain, china and other specialties; also including the details of the manufacture and uses of cement and the details of other allied industries.

BRICKMAKERS ON THE HUDSON TALK STRIKE.

When the labor unions enter an industry there is sure to be trouble. For example, the brick industry in the vicinity of New York has gone along for years without any serious controversy. Suddenly the labor leaders begin the work of organization in some of the Eastern yards and straightway there is talk of strikes and lockouts. It is a pity that the organization of the workmen in an industry should mean nothing but constant and expensive dissension. The men demand recognition of the union and higher pay. The owners say that they shall lock out the complainants. It is possible, though it can scarcely be credited as probable, that the men engaged in making the brick will go out. If a labor fight begins now, just as the season is opening, it will be productive of tremendous losses. The demand for brick is going to be so strong and the building contracts are so numerous that it will be practically impossible to fill them unless every available man works full time. But strike and lockout talk does not seem very encouraging. The losses will not end with those upon the brick which might be delivered, but it will be an opportunity for the cement block men to show how cheaply they can fill orders for structural material, and they will not be slow to take advantage of it. That much may as well be understood at the start. If, therefore, it is possible to get along without any labor difficulty it will be worth while to make reasonable concessions to secure peace. To permit the cement people to secure any advantage now would be dangerous, and in the end might result in greater losses than the strike itself would entail. The demands of the unions are undoubtedly unreasonable. They always are; but there is always a possibility that negotiation may secure some modification of these demands, and sometimes substantially the old conditions can be maintained. A strike is the worst thing that could happen in the brick industry this spring.

TRADE LITERATURE.

THE IOWA GRANITE BRICK CO., Clinton, Iowa, has favored us with its catalogue of sand-lime brick and building block. Both the text and the illustrations are interesting, and the distribution of this book among the builders of that locality is sure to make a favorable impression. It is the kind of advertising which brick manufacturers generally might indulge in with much profit.

"MAKING FACES" is the quaint title, though appropriate, of a little brochure recently issued by Pettyjohn Brothers, Terre Haute, Ind. The faces that they are making are of the attractive sort that are produced in the form of cement blocks. The illustrations seem to justify their claim that they are offering the trade the best, fastest, simplest, and incidentally the cheapest machines on the market for making concrete blocks. They solicit correspondence.

A CATALOGUE OF MOLDED and ornamental bricks made by the Hydraulic Press Brick Companies has been received with the compliments of the main office at St. Louis, Mo. Like all the products of the H. P. B. Companies, it is excellently designed and executed. It is substantially bound in cloth, with title in gilt, and contains a series of designes of pressed and ornamental brick and the manner of using same, that is of inestimable value to architects and builders. Indeed, the book is intended for members of that profession, not for brickmakers. However, the whole building profession is indebted to the Hydraulic Companies for this and similar works, for thereby a more general use of brick construction is encouraged.

CERAMICS AT THE LOUISIANA EXPOSITION is the title of an interesting booklet, which reaches us with the compliments of the author, S. Geijsbeek, St. Louis. Mr. Geijsbeek can well speak authoritatively on the subject, as he spent several months at the Exposition and made it his business to study the clay exhibits, both collectively and individually. That the document is of real interest and value is evidenced by the imprint of the American Ceramic Society, which it bears.

MARTIN'S MAGAZINE is the title of an interesting and instructive little publication issued periodically in the interest of the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa. The feature of this, their January issue, is the announcement of the National Convention, but it contains many timely suggestions and pointed paragraphs touching on the various phases of the brick business, as well as a series of ads for Martin's machinery, a pretty full line of which is illustrated on pages 688 and 689 of this issue of The Clay-Worker. Martin's Magazine will be sent free to any address.

THE C. W. RAYMOND COMPANY, Dayton, Ohio, has out a new catalogue showing its 1906 patterns of brick and tile making machinery. It is a handsome book of about 150 pages elegantly illustrated. Its extensive line of stiff clay brick and tile machinery is shown; also a variety of cutting tables, soft mud machinery, clay crushers and all manner of brickyard supplies, including represses, clay conveyors, cars, barrows, etc., etc. Those who manufacture ornamental brick will be especially interested in the series of designs of such ware made on Raymond machinery which the book contains. While it is a valuable and expensive book, we presume it will be sent free to those who are interested and apply for it.

HUBBY'S VIEWS—A SPRING ELEGY.

Tommy's in the back yard, pounding at the rugs,
Lizzie's sprinkling mothballs, annihilating bugs,
Auntie's on the ladder, wiping off the walls,
Baby's working overtime, getting in the bawls.
The plumber's in the kitchen hunting up a leak;
The bill will be a wonder, he's been there a week,
The paper-hanger's on the ground and everything is paste,
You'd know him if you couldn't see, through sense of smell and taste.

Mother has the curtains down, hunting for the tears,
Wifey's superintending things and mopping up the stairs.
The parlor looks like Mukden when the fightsky had been fought.
And I feel like the Czarsky when the news to him was brought.

There's soapsuds by the ocean and a thousand pounds of lye.
Cook's blacking up the kitchen stove with lightning in her eye.
It seems that I am in the road, standing up or sitting down,
The only meal that tastes just right is the lunch I get up town.

It's nothing short of suicide to try and close a door,
They say that we'll all turn to dust, I guess they've got it right,
There's dust enough on everything to hide it from your sight.

They've taken pictures from the walls and carpets from the floor,
A million books are scattered 'round and boxes by the score.
My shins are sore from bumping things when I come in at night,
There's not a thing that's in its place since they began the fight.

There's no such thing as comb and brush, a cake of soap or towel,
And if I ask them anything they answer with a growl.
I wish that someone could explain why women do these things.
They do not seem to think about the agony it brings.

It may be that their views are right, but if t'was up to me,
I'd surely let 'er go a year, or maybe two or three.
There's a lovely song called "Home, Sweet Home," it's O. K. in it's place,
But I'm not singing it just now or else I'm off my base.
I hope the sunshine will break out and melt away the fog,
Until that time I'll go and tell my troubles to the dog.

—Ed. H. Jacobs, in Ohio State Journal.

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The Richardson-Lovejoy Engineering Company, Successors to W. D. Richardson, Consulting Engineer to the Clay Industries. See page 674.

WANTED, FOR SALE, ETC.

FOR SALE—A brick yard requiring small capital. A special bargain lies in this yard. Address, RED CLAY.
3 1 dm Care Clay-Worker.

FOR SALE—4-mold dry press, extra condition. 2-mold dry press. 8-foot Boyd dry pan, good as new. Immediate delivery. Bargain.
4 1 d 31 East 18th Ave., Denver, Colo.

FOR SALE.

One of the best brick plants in Eastern Indiana. Plenty of clay, good market, and in a city of 35,000 population. For full partiulars address
P. O. BOX 274.
4 3 c Muncie, Ind.

FOR SALE—At Southland, Ga., one business and one residence lot, on road now under construction from Brunswick to Birmingham. In the heart of the famous Elberta Peach region. Owner purchased four lots and will dispose of two at reasonable price. Address, J. E. MINTER.
3 1 d Macon, Ga.

For Sale, Wanted, Etc., Ads Continued on Pages 656, 657 and 658.

The Raymond System of Open-Air Drying.

Much the Cheapest Drying System Known.

THE C.W. RAYMOND CO.
DAYTON, O.U.S.A.

The McKenzie Patent Elevating and Lowering Brick Car.

The McKenzie Patent Elevating Car is so constructed that it operates positively and without perceptible jar. It can be run in either direction or operated from either end. The car is built a standard 24″ gauge, and can be adapted to existing methods. The car is built with a view to withstand the rigorous duty required of it. Entirely of iron and steel, and well proportioned. Exhibit 63 explains in detail.

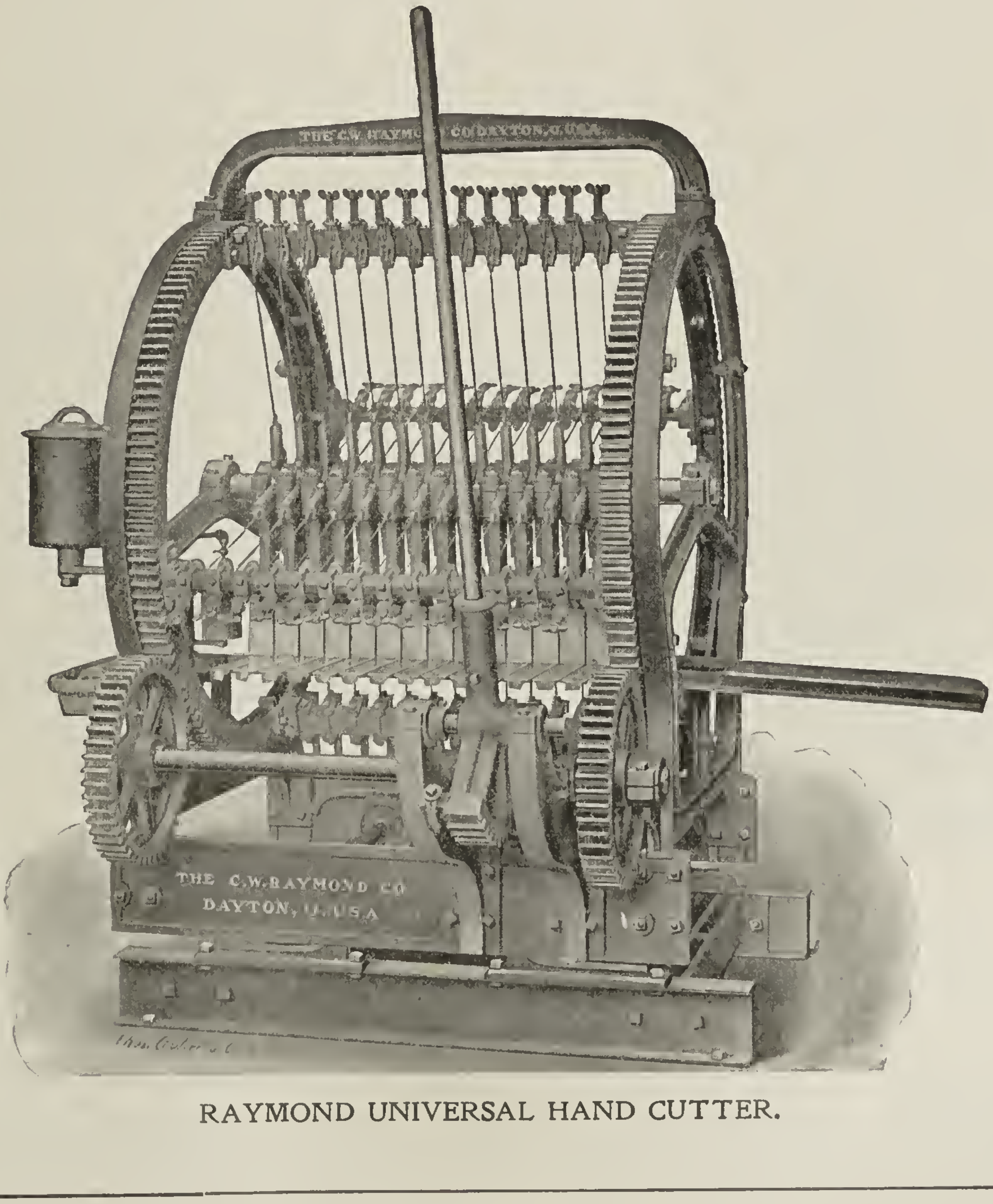
The C. W. RAYMOND COMPANY,

DAYTON, OHIO, U. S. A.

THE UNIVERSAL.

Fills the demand for cutting a high grade face brick. A shear down cut is given to the brick and all brick are cut positively true to line. The cutting wires are guided by the platten entirely through the column of clay. The rotary motion is in one direction, and the capacity limited only by the skill of the operator. The most practical cutter made.

We manufacture everything required for the brick plant.


THE C.W. RAYMOND CO DAYTON, O.U.S.A.
THE C.W. RAYMOND CO
DAYTON, U.S.A.

RAYMOND UNIVERSAL HAND CUTTER.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

MR. J. V. ROSE, President of the Rose Fire Brick Company, who has been East for a number of weeks, reports excellent prospects for a market for the bricks manufactured from the magnesite ore reduced at the large new plant in Oakland, Cal. The regular manufacture of fire brick has been interrupted by the bad condition of the roads over which the ore must be handled a part of the distance from the Livermore Valley.

The Steiger Terra Cotta and Pottery Works reports a good demand for plain terra cotta for building purposes. The pottery business is in an excellent condition. There is every indication of a big demand for everything required in the building line during the remainder of the year. The Bay View Brick Company's plant has made a good record since the new stiff-mud machinery was installed and the capacity will be increased as the demand grows.

The Patent Brick Company, George P. Kane manager, has moved its local office to the Rialto Building. The new dryer has been completed at the plant at Brick Station, north of San Rafael, on the California Northwestern railroad. This will enable the new press which was installed last year to be operated to its full capacity, greatly increasing the output of the plant. The old brick machine will also be retained for use when the conditions require it. A superior quality of brick will be turned out and shipped by either rail or water, according to the requirements of the case.

N. Clark & Sons' plant at Alameda is very busy on terra cotta for architectural work, sewer pipe, etc. Terra cotta with a matte surface is in the greatest demand, and there is some call for terra cotta enamel. Light glazed brick with matte surface so as not to cause a strong glare, is in great favor for light wells, etc., in office buildings. A good demand for sewer pipe exists.

The building situation in San Francisco looks very encouraging from the standpoint of brick and terra cotta manufacturers. More large buildings are in course of construction and projected than at any previous time in the history of the city. The buildings include fourteen to eighteen-story office structures, hotels, apartment houses, federal buildings, warehouses and theatres. In most instances brick and terra cotta are used as the principal materials. In some cases the first and second floors are faced with stone, while terra cotta and brick are used for the upper floors. The unusually rainy spring has delayed building operations, but a great deal of work is already in progress and unless there is a serious shortage of materials this will probably be a record breaking year. Five hundred and sixty-seven permits were issued during the month of March, aggregating in cost $1,746,493.

There is an ample supply of common brick at low prices. The soft-mud plants have not started up for the season, but will soon be ready. They have been burning bricks molded last season throughout the winter. There is a fair supply of pressed brick at good prices with prospects of a market for all that can be made this year. The demand for the best quality of sand-stone bricks and sand-lime bricks continues fair.

A. E. Clutter, of Lima, Ohio, has been traveling over the State to locate a deposit of clay suitable for the manufacture of roof tiling. He found a deposit of plastic clay near Whittier, on the H. B. Crawford ranch, and lost no time in authorizing S. W. Barton & Co. to buy in seventy-six acres. Mr. Clutter states that the close proximity to three railroads, abundant water and cheap fuel make the conditions ideal for such an institution.

The Winsor Pottery and Terra Cotta Works has made application to the Board of Works for a building permit to erect a factory three stories high at the corner of East 12th street and Park avenue, Oakland, Cal. The frame work of the building will cost $8,000.

A factory for the manufacture of tiles for various purposes has been opened at Saltillo, Mexico. Tiles of all shapes and sizes will be manufactured.

The Los Angeles Pressed Brick Company is expending $3,500 for a loft building at its yard. The building contains two open lofts for the drying of green material.

Articles of incorporation have been filed by the Gessel Pressed Brick Co., of Logan, Utah. The capital stock of the company is $40,000. Gottlieb Gessel, Jr., is President and Carl Gessel is secretary and treasurer.

The Pacific Manufacturing and Supply Company has been incorporated at San Pedro, Cal., with a capital stock of $25,000 by G. Alexander, Phillip M. Gaffey, James H. Dodson, A. P. Earl and Chas. Nicolai. The purpose of this company is to manufacture brick, lime and cement.

The Brick Construction Company has been incorporated at Los Angeles by W. F. Botsford, A. H. Conger and G. W. Cadwallader with a capital stock of $100,000.

E. C. Allen, of the Albuquerque Pressed Brick and Tile Company, of Albuquerque, N. M., has returned from St. Louis, where he closed a contract with the Fernholtz Brick Company for an outfit of press brick machinery, which will cost about $6,000. Part of the machinery is now on the way and the rest is being prepared for shipment. The machinery includes a four-mold Fernholtz improved brick press, a nine-foot Frost dry pan, one complete 10-inch elevator, one iron frame mixer, line shafting, belting and boxes and hangers, pressed pulleys, four roller-bearing brick barrows, four standard spring brick trucks, two sheets perforated steel screen, two Quincy clay gatherers and one clay plow. The company is letting contracts for the erection of the buildings south of the city, and ground will be broken this week.

Three schooners, each carrying 60,000 brick have discharged cargo at Point San Pablo for the Standard Oil factory building.

A modern brick yard will be established at San Luis Obispo, Cal., equipped with the latest machinery. D. D. Barnard and A. F. Fitzgerald are at the head of the project, and P. R. Houdek, of Los Angeles, who has been foreman for the Los Angeles Brick Company for several years past, has been engaged as foreman for the new concern.

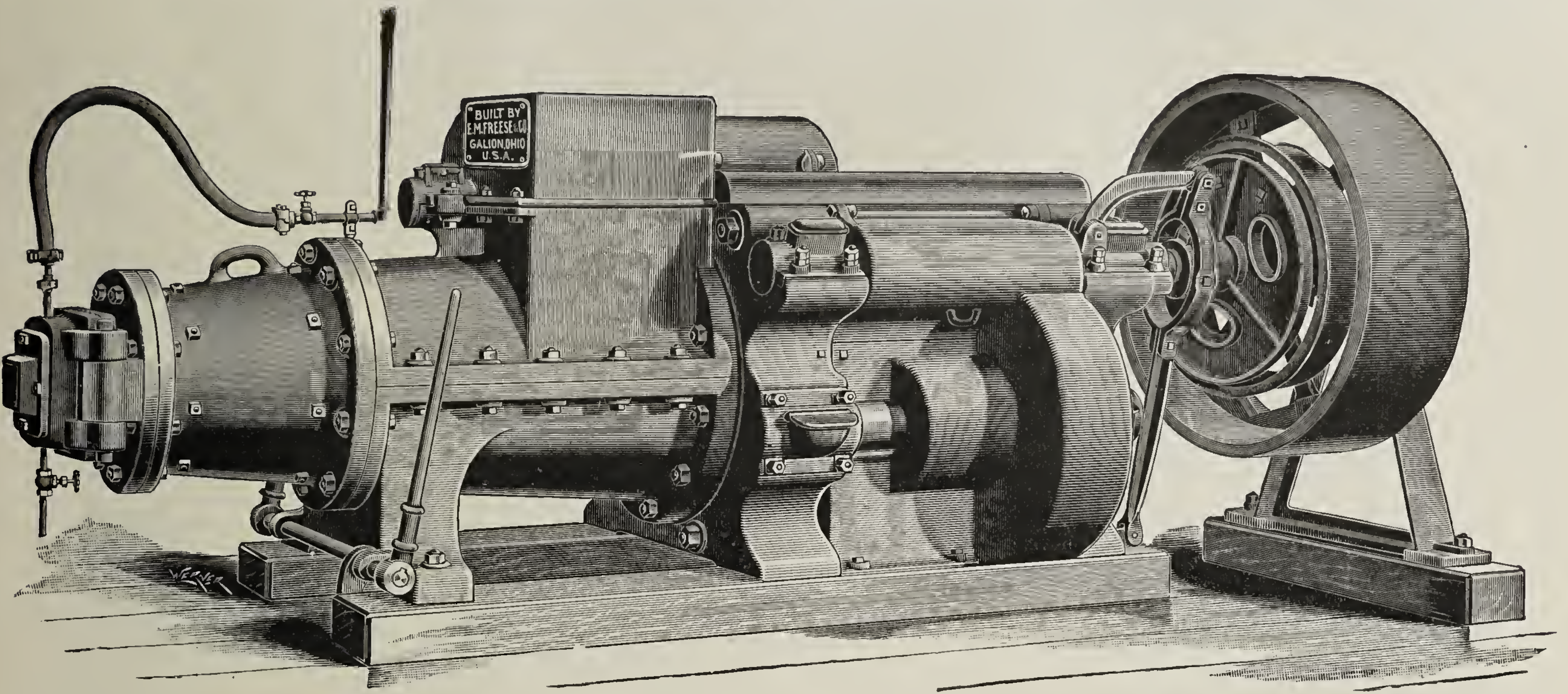
San Francisco, April 5, 1906. Sunset.

NEWS NOTES.

The Excelsior Brick Company, of Montgomery, Ala., has rebuilt their plant and have installed additional machinery, and when they have completed, will have one of the best equipped plants in that city. The C. W. Raymond Company, Dayton, Ohio, furnished all the machinery, and the plant is now equipped throughout with machinery of that make. The Montgomery people report they are several hundred thousand brick behind with their orders, but with their increased capacity they think they will be able to meet the demand.

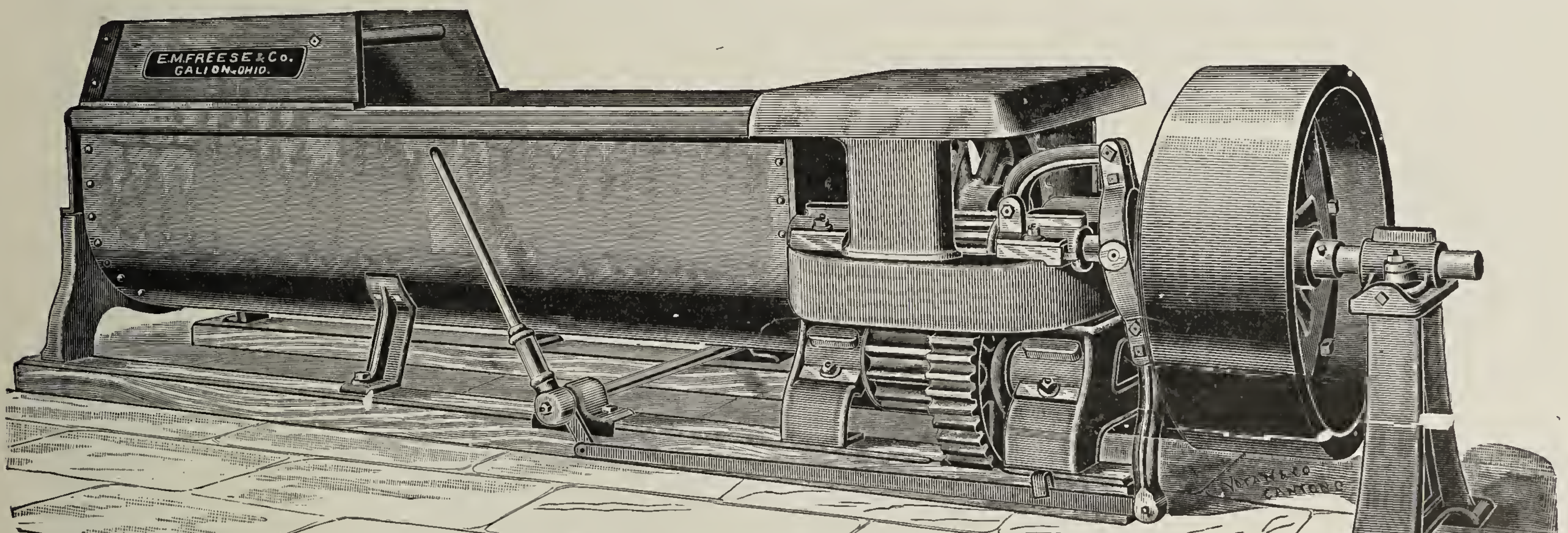
The Illinois Supply and Construction Co., St. Louis, Mo., is having a good trade with a bright outlook for the coming season, receiving many inquiries for machinery both from clay and sand-lime brick manufacturers. Orders have recently been received for the Grath special hand-power press from E. L. Dexter, Dayton, Wash., P. Anderson & Co., Edmonton, Alta., Cana., W. M. Carthage, N. C., Peerless Brick Co., New York, Paragon Plaster Co., Syracuse, N. Y. The last three are manufacturers of sand-lime brick. One of their three-mold press has recently been shipped to the McDonnell Brick and Cement Company, Jacksonville, Fla.

Our Mammoth Brick Machine


BUILT BY
E.M.FREESE & CO.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitetd for making a fine quality of brick.

E. M. FREESE & CO., - - Galion, Ohio.

Mention The Clay-Worker.

See Ads on Pages 700 and 701.

EDITORIAL NOTES AND CLIPPINGS.

S. T. Seifert, will start a brick plant at Grangeville, Idaho.

C. R. Littell, of Littell, Wash., and J. Elburt Williams have leased the brick yard at Centralia, Washington.

Mr. Jacob Pontz, of Lancaster, Pa., is putting in the Martin patented dryers and delivery system of 20,000 capacity.

Frank Rodgers, formerly of Payette, Iowa, will erect a plant at Sunnyside, Wash., for the manufacture of brick and tile.

E. B. Howard has purchased the controlling interest in the Tulsa Red Fork Brick Company, at Tulsa, Ind. Ter., and has assumed entire management.

The Steelton & Harrisburg Brick Co., Steelton, Pa., is installing the Martin patented system of handling and drying soft mud brick of 35,000 capacity.

The Smith Brick Company is a new concern incorporated at Omaha, Neb., to manufacture brick. The incorporators are, J. Fred Smith, I. V. Smith and George B. Dyball.

J. J. Miller has purchased the interest of Seely McCord in the Miller & McCord Brick Works, at Benton Harbor, Mich., and is now sole proprietor.

Leiby & Flurrie, New Cumberland, Pa., is installing the Martin latest improved style "A" steam power brick machine in combination with horizontal pug mill and including disintegrator, elevators, etc.

Robert E. Pray has purchased the brick yard at Greenfield, Mass., formerly owned by the New England Brick Company. He will make a number of improvements in the plant and install electric power.

The S. D. Corey Brick Company has been incorporated to manufacture brick at Coxsackie, N. Y., with $35,000. The directors are Sylvester D. Corey, Edward Ashley, of Coxsackie and I. W. Brandow, Catskill, N. Y.

The plant of the Zealand Brick Company, Zealand, Mich., owned by Veneklasen Brothers, was completely destroyed by fire April 9th. The loss is estimated at about $25,000. The plant will in all probability be rebuilt.

A number of improvements have been made at the brick plant of C. Solfisburg Sons, Aurora, Ill. During the past winter, new machines, crushers, and elevators have been added and the motive power changed from steam to electricity.

The Milharking Contracting and Supply Company, of Newark, N. J., is installing the latest improved Martin style "A" steam power brick machine, fitted up in combination with horizontal pug mill, etc., at their plant at Florida, New York, this equipment being purchased from The Henry Martin Brick Machine Manufacturing Co., Lancaster, Pa.

The Alden Clay Products Company of Crandon, Wis., capital stock $50,000 has filed articles of incorporation. The incorporators are L. T. Crabtree, M. D. Keith, and A. L. Crabtree. The company will, during the coming season, build a plant for the manufacture of brick and other clay wares near Crandon, where they own a large deposit of very fine clay.

Another pamphlet has lately been presented to the public by the New York Blower Company, 25th Place and Stewart Avenue, Chicago. It is numbered 63 and shows the different styles of engines used for driving fans, either direct connected or belted. The publication is tastefully gotten up and is full of information. It may be had by application to the New York Blower Company's office.

F. F. Prentiss, second vice-president of the Cleveland Hydraulic Press Brick Company, has just been honored by being elected president of the Chamber of Commerce, of Cleveland, Ohio. Mr. Prentiss leads a very strenuous life, for besides his interest in the brick company, he is at the head of the Cleveland Twist Drill Company, a concern employing over 600 men, and shipping its products to every part of the globe; a director of the Superior Savings and Trust Company, and also of the Lake Shore Banking and Trust Company, and besides all this, he finds time for much work of a philanthropic character.

A company has been organized at Wilsoncreek, Wash., for the manufacture of brick.

The office building of the Farr Brick Company, Cleveland, Ohio, was completely destroyed by a fire that caught from the dry kiln. The loss is estimated at close to $1,000.

"Messrs. Geo. H. Clippert & Bro., Brick Co., Detroit, Mich., are installing the latest improved Martin patented system of handling and drying soft mud brick of 33,000 capacity.

The Norton Brick Company has been organized at York, Me., for the purpose of manufacturing and dealing in brick and other clay products. John C. Stewart, of York Village, is president, and treasurer.

The Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa., is installing their latest improved patented system of handling and drying soft mud brick on the plant of Mr. W. H. Carbaugh, New Oxford, Pa.

Charles M. Crook, general manager of the Bessemer Limestone Company, Youngstown, Ohio, has just booked an order for the year's supply of paving brick for the city of Wheeling, W. Va. The contract calls for about a million and one-half of brick.

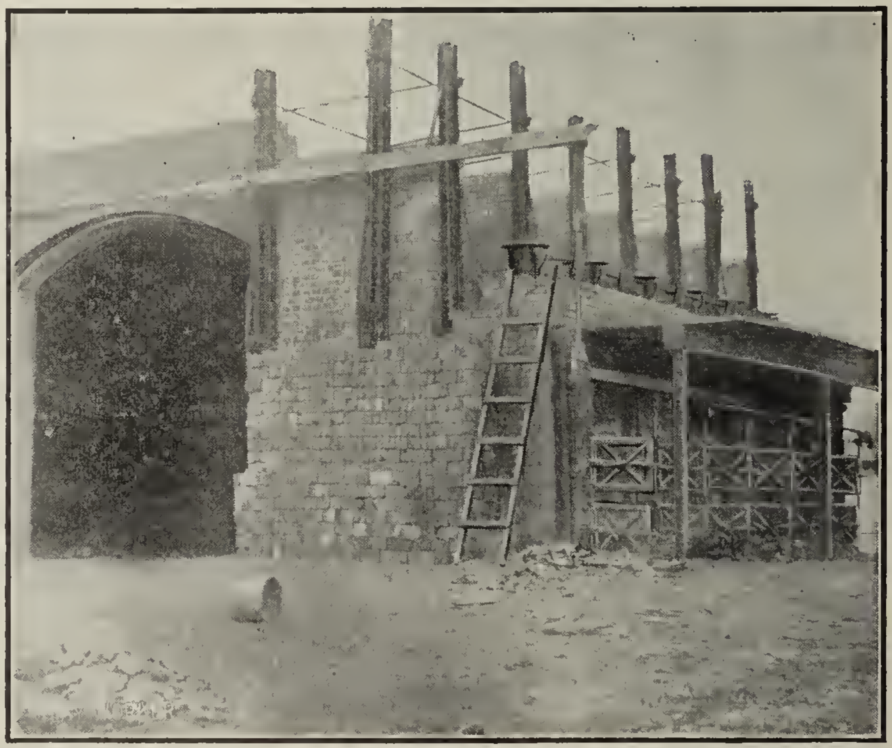
The Columbus Pottery Co., of Columbus, Ohio, whose plant is located at Worthington, Ohio, is considering the erection of four new decorating kilns. The plant is a new one and has just been started up. They are short on decorating kiln capacity.

A charter has been granted the Jackson Pressed Brick Company, of North Augusta, Ga. The officers of the new company are, president, W. E. Jackson; vice-president, J. S. Phelan; and secretary, G. T. Jackson. A plant will be erected at once of 30,000 daily capacity.

The Montello Brick Company of Reading, Pa., has obtained absolute control of Middletown Shale Brick Company's plant at Middletown, Pa., and is now running same to its full capacity of 25,000 a day. A number of extensive improvements

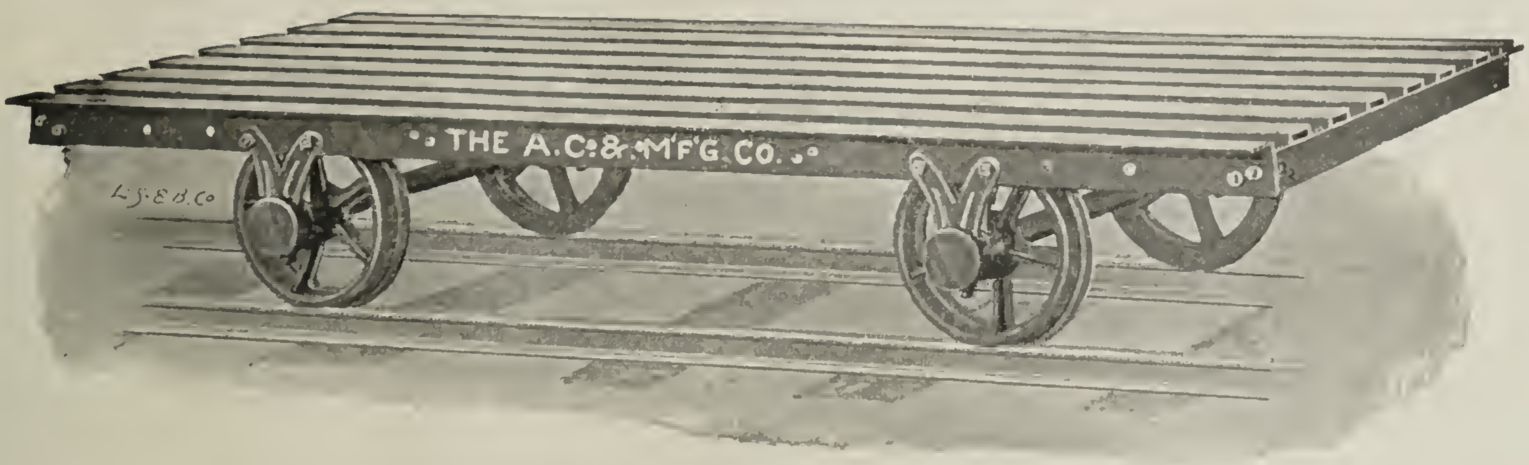
[Continued on page 650.]

Parker's Gas Producer Continuous Kilns.

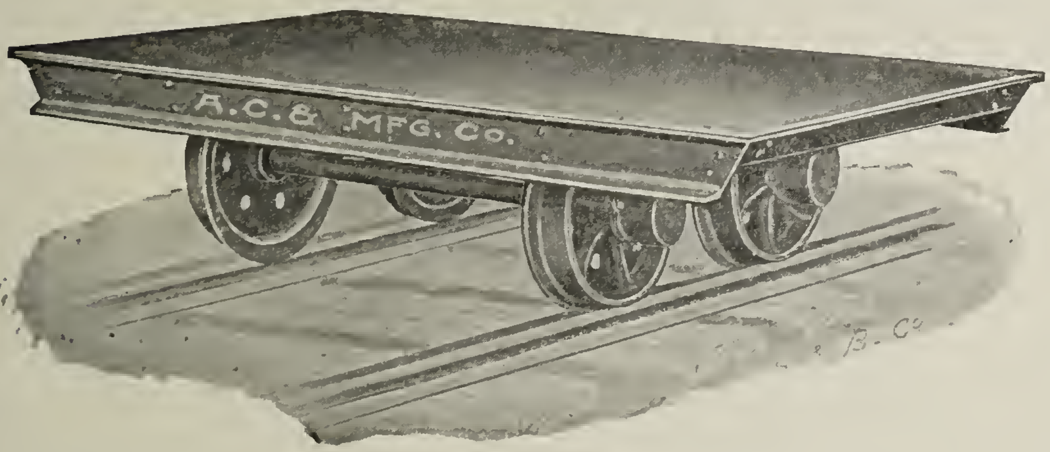


Fuel saved from 50 to 60 per cent.
Uniform burns Simple construction.
Easily repaired. Correspondence solicited.

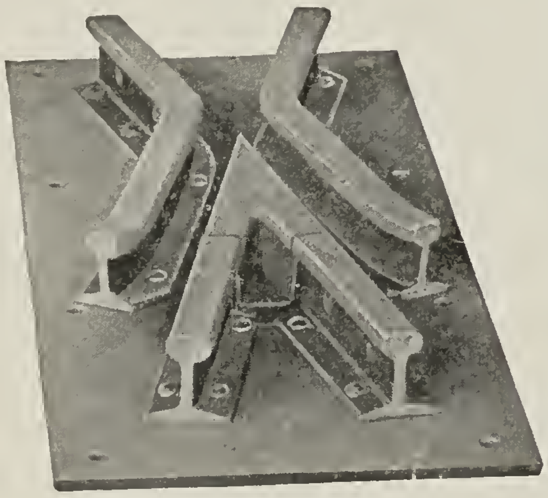
LEMON PARKER,
3314 Morganford Road, St. Louis, Mo.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



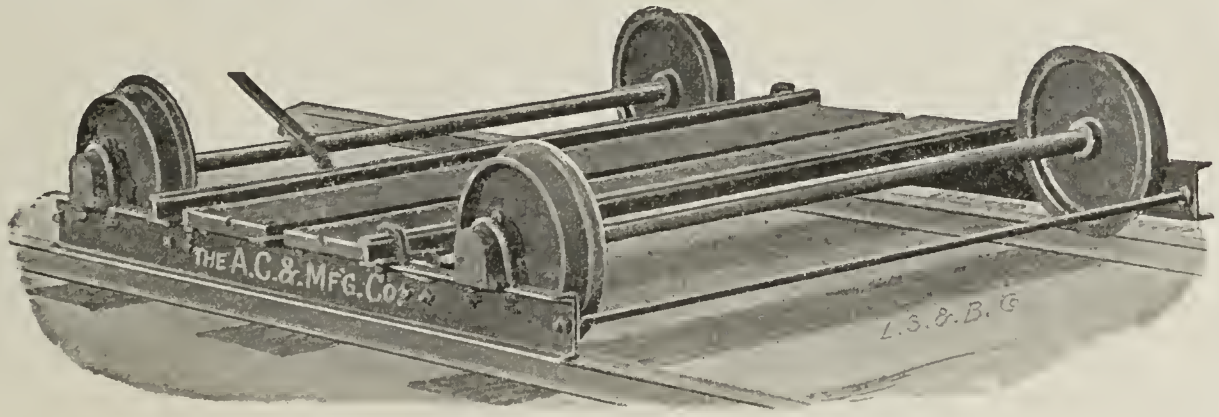
No. 1025. Steel Frog.

The Atlas Car & Mfg. Co.,

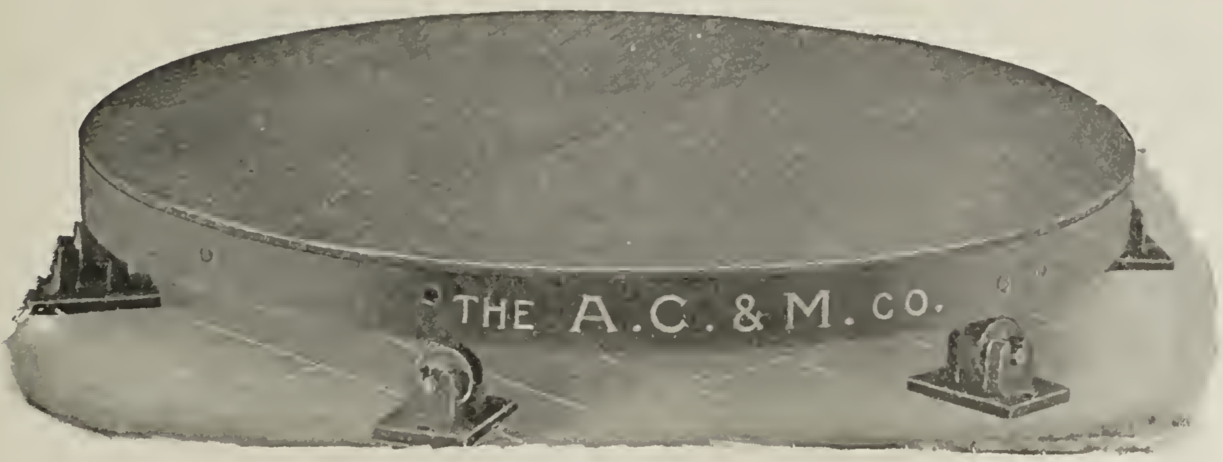
CLEVELAND, OHIO.

**Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc
Also Transfer Cars, Turntables, Clay and Dump Cars.**

No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

See Ad on Page 582.

EDITORIAL NOTES AND CLIPPINGS—Continued.

have been made in the plant, and it is now up-to-date in every particular.

S. L. Snow, Mountain Top, Ark., advises us that he is in the market for a rock crusher and road working machinery.

R. H. Etheredge will start a brick manufacturing plant at Saluda, S. C., and is in the market for equipment for same.

Wenatchee, Wash., wants a brick and tile plant. D. D. Olds will be pleased to correspond with interested parties.

The Liberal Brick Company, of Liberal, Mo., has been incorporated, by James Gwynn, Geo. Meller, Jr., John H. Lavery, and others, with $15,000 capital stock.

The Stuyvesant Brick Company has been organized at Mechanicsville, N. Y., by Cornelius Sheffer and Fred H. Ferris, of Mechanicsville, and John Scanlon, of Cohoes, N. Y.

The Globe Stoneware Co., of Crooksville, Ohio, which was destroyed recently by fire, will be rebuilt as soon as the company get matters adjusted with the insurance companies.

The Jamison Press Brick and Stone Company has been organized at Devils Lake, N. Dak., for the purpose of manufacturing pressed brick and tile. A new plant will be erected at once.

C. H. Dawley and John Clark, of Hiawatha, Kansas, will start a brick manufacturing plant at Norton, Kansas. They are both practical brickmakers, so there is no question as to the success of the enterprise.

The Rich Hill Vitrified Brick and Tile Company, Rich Hill Mo., has been sold to Mr. I. R. Lamport, of Texas, who will move to Rich Hill at once and operate the plant, which has been idle for two years.

The National Drain Tile Company, Terre Haute, Ind., is installing a complete mining outfit for the purpose of removing the coal now underlying the shale beds. They will henceforth be independent of any coal strikes.

John Kaul and Frank Oberkirch, of St. Mary's, Pa., have purchased the plant of the Meyers Clay Manufacturing Company, at Toronto, Ohio, for $275.000. The new firm will be known as the Kaul-Oberkirch Co. They will manufacture sewer pipe, flue linings, etc.

Martin N. Kimbell, a well-known citizen of Chicago, died at his home in that city March 26th, after an illness of nearly a year's duration. For years Mr. Kimbell was actively connected with the Chicago Hydraulic Pressed Brick Company, and was a brother of S. S. Kimbell.

Johnson Bros. are erecting a plant at Granger, Wash., for the manufacture of pressed brick, roof and drain tile. Capt. John Porter, of Kenilworth, Penn., has purchased the Park Fire Clay Company's brick works there, and will put the plant into active operation in a very short time.

A new concern to be known as the Bayou Sara Brick Company has been organized at Bayou Sara, La., with $12,000 capital stock. The plant will be located just above the town of Bayou Sara and work on same will begin at once. The officers of the company are, president, John F. Irvine; vice-president, Dr. A. F. Barrow; manager, A. Schuebelen; treasurer, J. R. Matthews.

The plant of the Monroe Brick Company of Monroe, La., is being over-hauled and remodeled, and an order has been placed with the C. W. Raymond Company, Dayton, Ohio, for two car loads of machinery, including compound roll crusher, pug mill, granulator, friction hoist, and clay cars. The plans for the plant have been made by the Raymond Company and Mr. J. C. Harris general manager of the Monroe Brick Company, will have charge of the construction.

C. K. Williams & Co., Easton, Pa., manufacturers of clays, talc, paper fillers, dry paint, etc., report that they are having an unusually busy season. They are making a specialty of dry colors for cement and sand-lime brick manufacturers, being among the largest producers of colors for that class of manufacturers in the United States, having three plants at Easton, Pa., and one at Allentown, Pa. They are also at present producing a special black for mortar colors and at a price which makes it specially desirable.

S. M. Morrison, known among the builders as the first man to introduce the maufacture of brick by the dry press process into Colorado, died at his residence in Denver, April 11th, of chronic Bright's disease. He has been confined to his bed since December. Mr. Morrison was the sole owner at the time of his death of the Denver Pressed Brick Company, of which firm he had been a member since 1881. He was born in 1844 in Wainsborough, Va., moving to Denver in 1872. He is survived by a widow and five children.

S. T. Fleshman and E. R. Barrington, of Center, Texas, contemplate engaging in the brick business.

The Kipling Brick Company has been incorporated at Thomaston, Ala.; J. O. Clancy is at the head of the concern.

Mr. J. Frank Boyer, Norristown, Pa., is installing at Spring City, Pa., the Martin patented rack pipe steam brick dryers, with a holding capacity of 32,000 stiff mud brick and including delivery system.

Fire of unknown origin entirely gutted the plant of the Union Brick and Tile Company, at Dawson, Iowa, causing a loss of $15,000. The plant will probably be rebuilt.

The Home Brick Company, of Iola, Kansas, was turned over to the new proprietors, H. H. Funk, G. A. Bowlus and A. J. Fulton, the first of March, and is now ready for operation.

Maurice Hockman an architect of Watertown, S. Dak., has discovered a clay of a superior quality near that place which makes a fine pressed brick. A company will probably be organized to develop the deposit.

The Lowe Brick Company has been incorporated, and purchased a brickyard at New Paltz, N. Y. The plant will be remodeled, and a complete equipment of machinery has been ordered from the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa., for a 40,000 per day capacity plant.

The Hydraulic Press Brick Company, of St. Louis, Mo., has purchased the plant of the Ayer-McCarel Clay Company, of Brazil, Ind. The capacity of the plant which is now 9,000,000 brick a year will be largely increased. The product is a very fine quality of impervious vitrified face brick and glazed brick, for which there is a large demand.

The Wallace Manufacturing Company sustained a great loss in the death of their secretary and treasurer, James McClamroch, whose demise occurred March 31st. Mr. McClamroch was one of the principal stockholders of the Company and was one of the wealthiest and most respected men in Clinton County. At his death, he carried $101.000 life insurance. His loss will not only be felt by The Wallace Mfg. Co., but by the community in which he lived.

Excellent Industrial Locations

—ON THE—

QUEEN & CRESCENT ROUTE

And
Southern Railway.

Timber Lands. Fine Blue-Grass Farm Land.
Iron and Coal Mines.

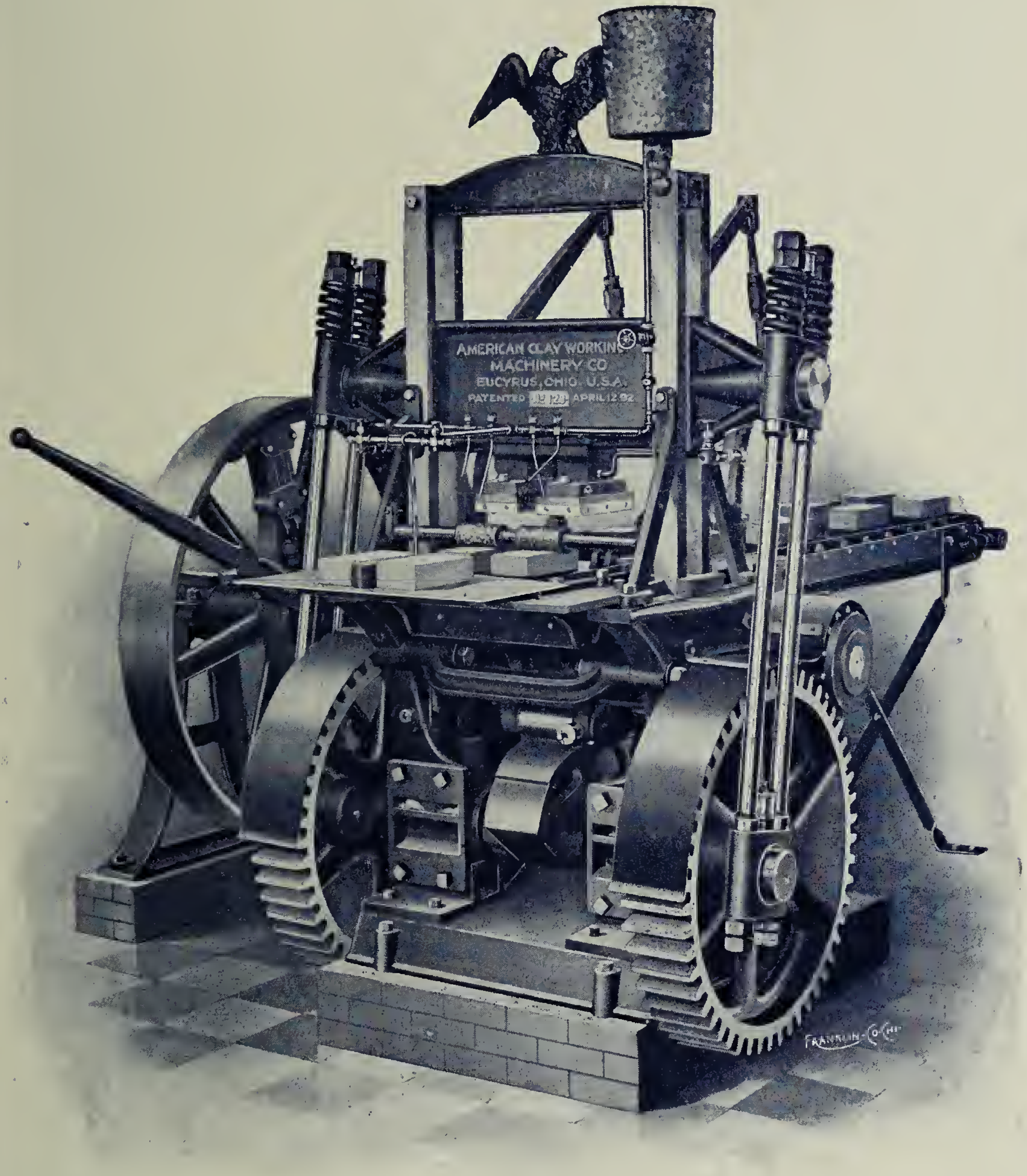
Railroad facilities to all points South, North, East and West.

For information address

W. A. GARRETT, Gen'l Manager,
W. C. RINEARSON, Gen'l Pass'r Agent,
Cincinnati, Ohio.

A Standard of Excellence.

If you want a Repress that will give you plenty of product and no trouble, an honestly built machine with no useless parts; a machine that will cheerfully work twenty-four hours a day; a machine that requires no repairs and little attention you must get the Eagle. You can not find a faulty Eagle anywhere. All users satisfied. It is a press that is built just as represented. No fictitious weights to give an idea of solidity. We guarantee it. Write us.



The Eagle Double-Mold Brick Repress, Front View.

We build every machine and appliance needed for making Clay Products by all processes, including Waste Heat, Steam and Hot Air Dryers. Our Soft Mud, Stiff Mud and Dry Press Brick Machinery is built on Merit and sold that way.

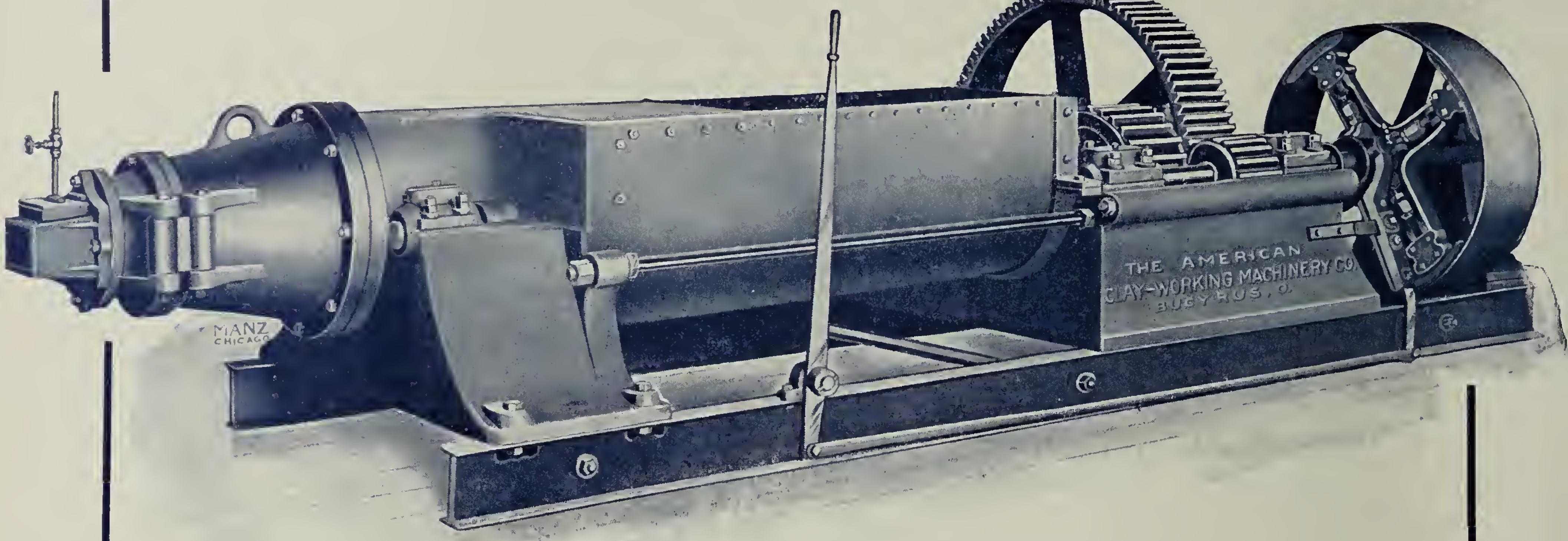
The American Clay Machinery Company,

Bucyrus, Ohio.

Built Right
Run Right

Built Right
Run Right

You Have Your Choice.

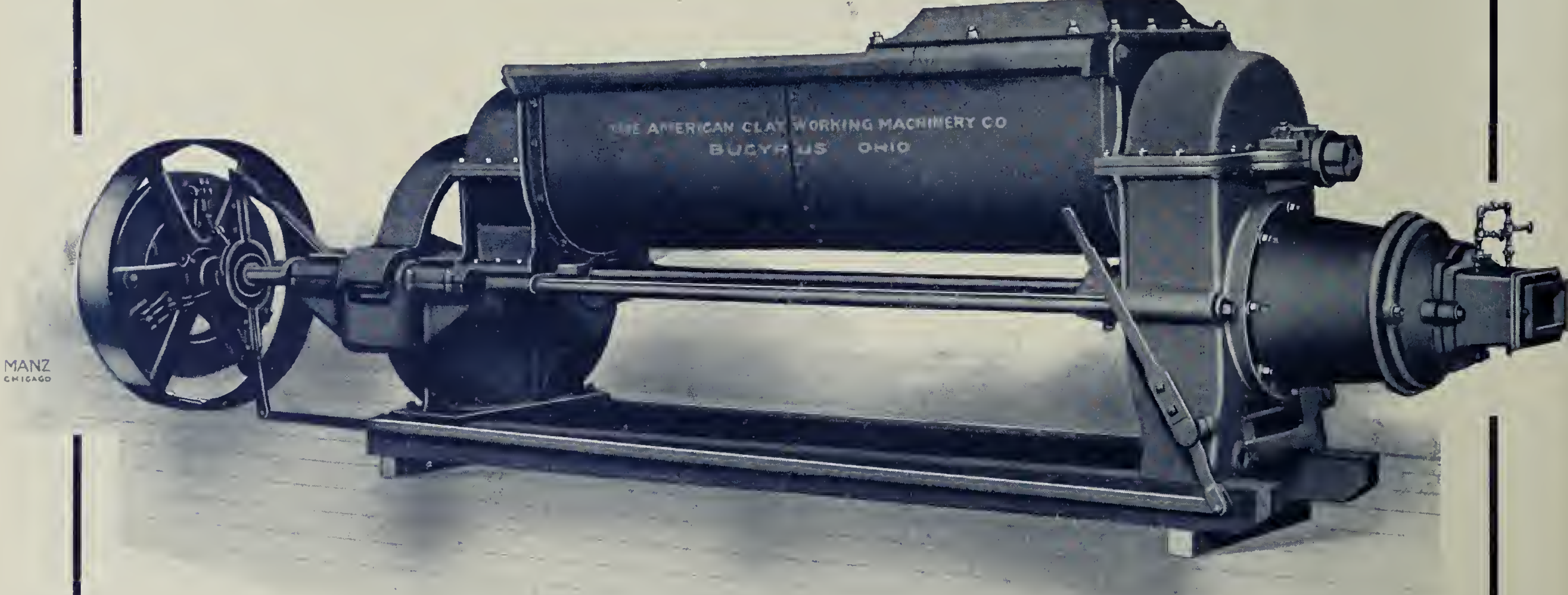


No. 32 Low Frame Combination Machine—Patented.

It's up to you to decide whether you prefer a Low Frame or High Frame Combined Auger Machine and Pug Mill. Following our well known policy we are builders of both models and allow our customer to choose. We will be pleased to give you full particulars on both machines upon request. They are both well designed and carefully built of the best material. Write for particulars.

We also build a complete line of machinery and appliances for the manufacture of Clay Products by all processes, including Sand-Lime Brick, Pottery, Sewer Pipe and Hollow Ware. We build Waste Heat, Steam and Hot Air Dryers. Ask about our Model Equipment for a stiff Mud Plant.

The American Clay Machinery Company, Bucyrus, Ohio.

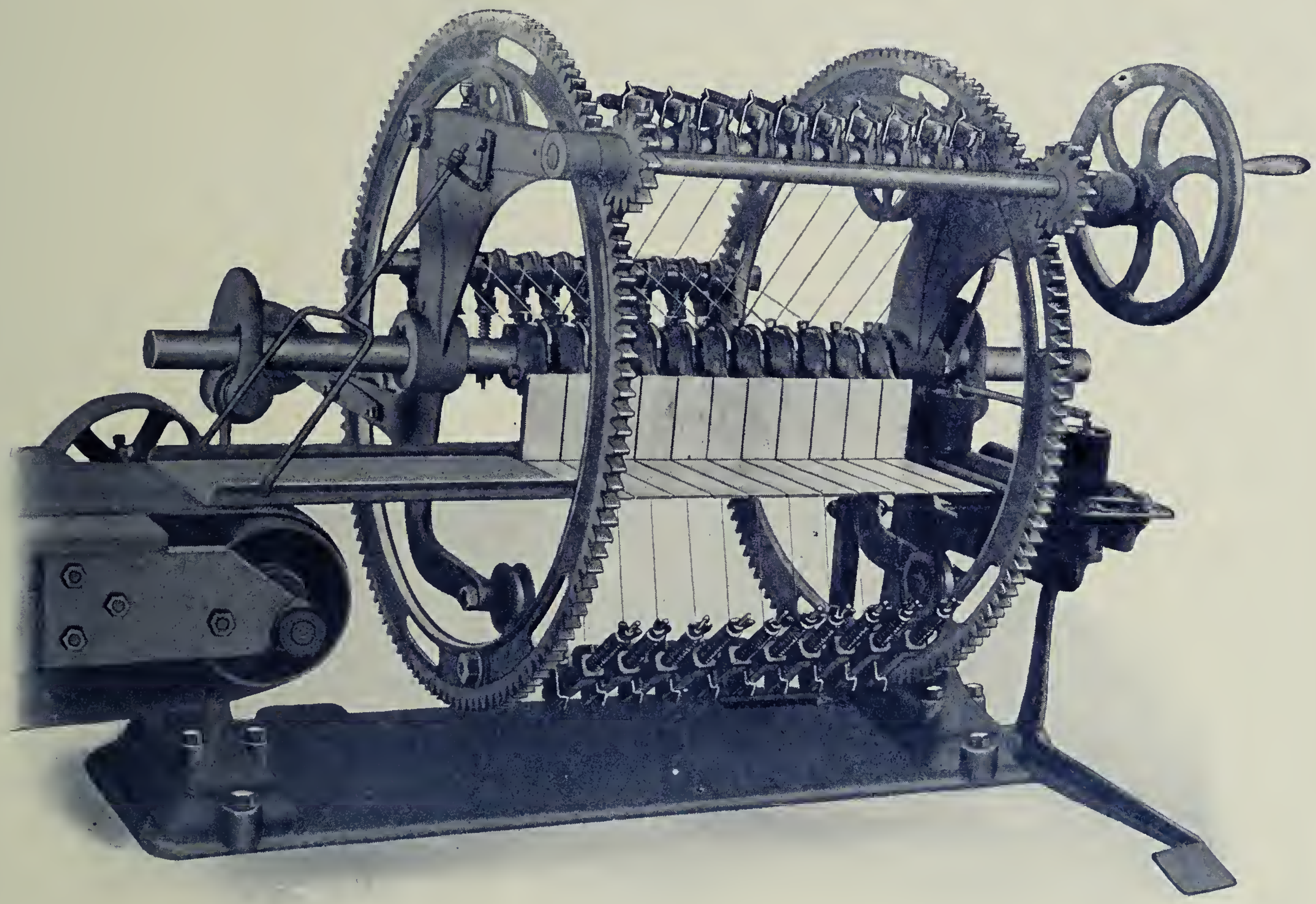

THE AMERICAN CLAY WORKING MACHINERY CO
BUCYRUS OHIO
MANZ
CHICAGO

No. 1 High Frame Combined Machine.

Automatic Quality at Hand=Power Price.

Our No. 62 Hand-Power Rotary Cutting Table places within the reach of every brickmaker a table which will cut brick equal in quality to the highest price automatic tables at a price which makes it a positive economy. In speed it is limited only by the ability of the operator. It is simple, strong and easy to operate. Will not get out of order, and will cut the very best grade of brick. The downward movement of the wires insures smooth edges. Write for complete description.

We also build every machine and appliance used in manufacturing every class of Clay Products, Waste Heat, Steam and Hot Air Dryers.



No. 62 Hand=Power Rotary Brick Cutter.

Dry Press Brick Machinery.
Stiff Mud Brick Machinery.
Soft Mud Brick Machinery.
Sewer Pipe Machinery.
Pottery Machinery.
Sand-Lime Brick Machinery.

We Build Our Own Dryers And Can Guarantee Their Quality.

The American Clay Machinery Company,

BUCYRUS, OHIO, U. S. A.

It Takes a Lot of Coal.

You need a lot and you waste a lot more than you need

It takes a lot of Coal. You need a lot but you waste a lot more than you need to. It's to save a generous per cent. of this coal that we have invented and put on the market our Waste Heat Dryer. You save all the coal formerly used for drying. Besides you get better results and save the labor of handling. It's an ideal method of drying. It's an ideal method of saving. It's an ideal method of convenience. We make our own fans for these dryers. We know their quality and guarantee them. We build other kinds of dryers for those who need or want them, but all are "Built Right and Run Right."

THE AMERICAN CLAY MACHINERY CO.
Bucyrus, Ohio, U. S. A.

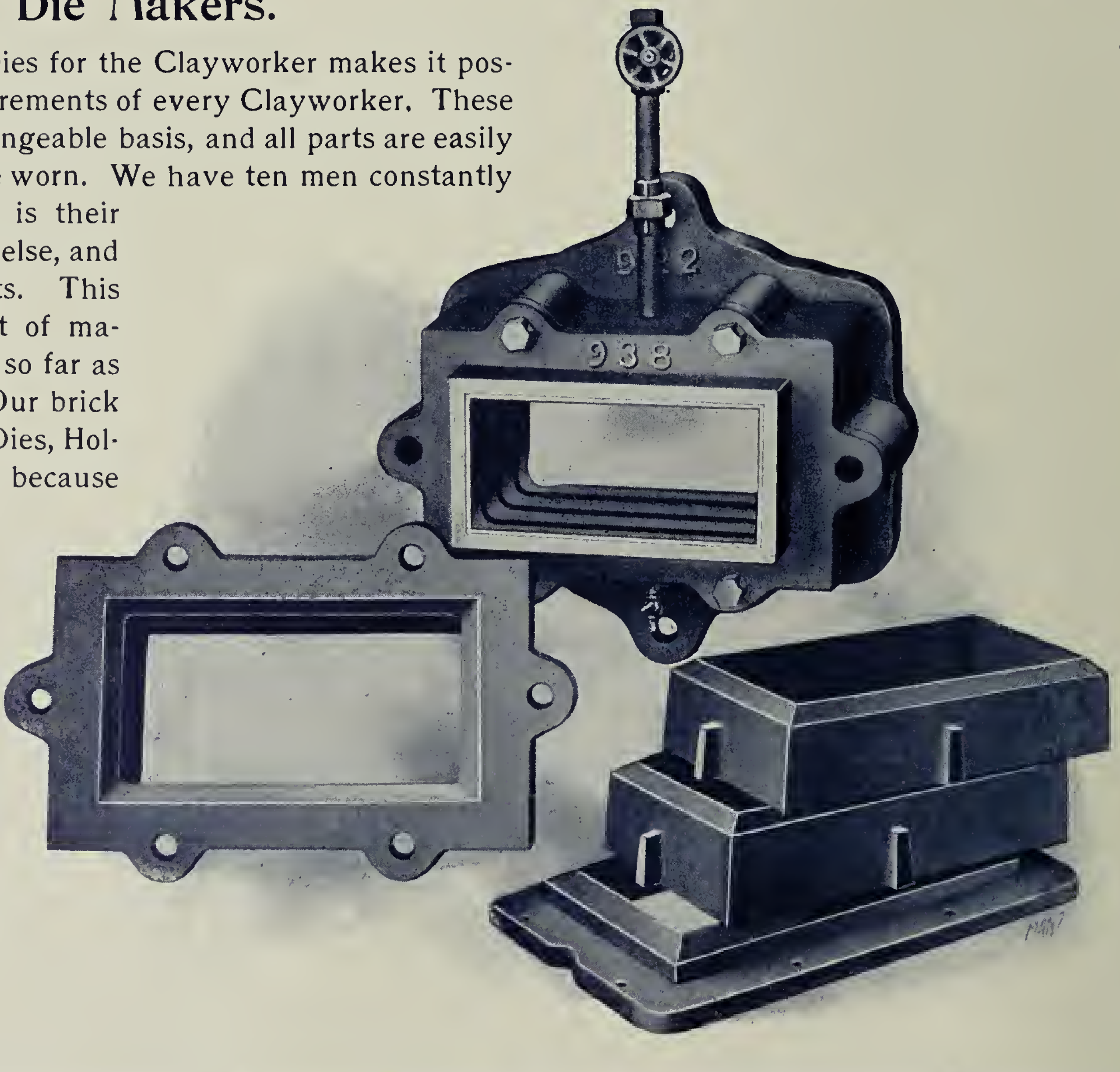
Built Right Run Right

Expert Die Makers.

Our complete line of Dies for the Clayworker makes it possible for us to meet the requirements of every Clayworker. These dies are built on an interchangeable basis, and all parts are easily changed should they become worn. We have ten men constantly at work on dies alone. It is their specialty. They do nothing else, and in consequence are experts. This ability, backed by the best of material, insures a perfect die so far as it is possible to obtain it. Our brick dies, Sewer Pipe Dies, Tile Dies, Hollow Block Dies are popular because of their excellence. Write for particulars on Dies.

We build a complete line of Clayworking Machinery, Dry Press, Stiff Mud, Soft Mud and Sand-Lime Brick Machinery, Sewer Pipe, Hollow Ware and Pottery Machinery, Waste Heat, Steam and Hot Air Dryers.

The American Clay Machinery Co.
Bucyrus, Ohio, U. S. A.



Built Right Run Right

Written for THE CLAY-WORKER.

POTTERY NEWS.

THE POTTERIES in this city are experiencing a good run of business so far this year, and from all indications, the year 1906 will be one of the best yet experienced. Of course there is the general kick of not getting enough money for the goods produced, yet the potteries are getting about 5 per cent. more money for their goods than they did this time last year, so that upon the whole, conditions are better this year than they were last.

The following short notes will serve to show what the potteries throughout the country are doing:

The Edwin M. Knowles China Co. of this city is about to erect a large addition to their factory here, and at least two new kilns will be erected. The company anticipates a splendid year.

The D. E. McNicol Pottery Co. of this city is putting up a new decorating kiln at its plant here. They have just completed another new decorating kiln which they have now placed in operation.

The Burford Brothers Pottery Co., of this city is putting in some additional machinery in its glaze room. The new machinery consists for the most part of glaze grinding cylinders.

The Anderson Porcelain Co. of this city is putting up a new addition and are also erecting a new kiln, increasing the capacity to three kilns. The company manufactures porcelain for electrical purposes.

The Kenilworth Tile Co. is the new concern putting up a new tile plant at Newell, W. Va. The plant will cost in the neighborhood of $50,000, and will, it is said, be the most up-to-date pottery in the world. While the plant will be very small in comparison, the class of goods manufactured, as well as the plant, will be entirely different from any thing upon the market to-day. The plant will have a capacity of three 13 ft. 6 in. kilns. The main office is located at East Liverpool, and Mr. J. A. May, for many years connected in an official capacity with the Cartwright Bros. Company of this city, will be general manager of the company.

The Potters Supply Co. of this city, manufacturers of saggers, etc., for pottery use, is contemplating the erection of an addition within the next few months.

The R. Thomas & Sons' Company of this city will erect immediately at their Lisbon plant, located at Lisbon, Ohio, two additional kilns. Another large addition will also be erected. All the new additions will be erected of brick and will be started within the next two weeks.

The East Liverpool Brick Manufacturing Co. of this city is about to erect two additional kilns at their factory in this city. It is probable that the East End Brick Works Co. will also erect two kilns, which will replace a large square kiln now being used at their factory. The plant is principally owned by Gamble, Surles & Co.

The American Sewer Pipe Co. has not decided whether or not its plant will be rebuilt here, although it is probable that it will. The sewer pipe made at this plant was among the best made in this country, but owing to the fact that the company has some plants that are idle it is barely possible that some of these may be started up in place of rebuilding the one here. The matter has not been fully decided upon as yet.

The Mosaic Tile Company, of Zanesville, is contemplating another large addition to their tile works there. Some new kilns will also be erected.

The U. S. Electric Porcelain Co., of Findlay, Ohio, which has a six-kiln pottery there, is now under headway and is producing an extremely fine line of porcelain, better than the average porcelain on the open market.

The Locke Insulator Mfg. Co., of Victor, N. Y., has moved into their new addition, which is twice as large as the old portion of the plant itself. This plant is one of the best in the country.

The Newell Pottery Company is making rapid progress with the new thirty-kiln pottery it is erecting at Newell, W. Va. The pottery will be among the largest in the world. A good many of the buildings are now well under way, and all of the kilns have been completed. Tom Potter.

East Liverpool, Ohio, April 10.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than $1.00.

FOR SALE—One Wellington Mold sander, used two seasons. Also four or five thousand wooden pallets. Address

H. G. MONEN,
4 1 c Defiance, Ohio

FOR SALE—One Boyd two mold dry press in excellent condition, having been used but very little. Will sell cheap. Address

G. PAUL ALEXANDER,
4 tf d Canton, Ohio.

FOR SALE CHEAP.

Good pressed brick plant in one of the large and prosperous cities of the middle West. Excellent shale bank; will make good vitrified brick. Good market for all. For further information address The Benkendorf Brick Co.,
4 1 d St. Joseph, Mo.

WANTED.

A man who understands brickmaking in all its branches, and who has $5,000 to $10,000, to buy an interest in a large brick plant in the West, and take complete charge of same at a good salary. Plenty of business at good prices; no competition. Owner has other business and wants some one interested who can run the plant. Address

MACK,
4 1 d Care Clay-Worker.

FOR SALE.—One Raymond "999." Stiff mud, side cut, brick machine. In first class condition. Abandoning yard and no use for it.

HYDRAULIC BRICK COMPANY,
4 2 dm Louisville, Ky.

WANTED—By a party owning one of the finest beds of shale in the South West, in a good gas town where there is no brick plant, an experienced shale brick man, who is able to put some capital in a plant. Write immediately to

J. J. CARSON,
4 1 cm Blackwell, Okla.

FOR SALE—An interest in my brick and tile plant, to one of experience who can take charge and run it and is able to invest some money. Plenty of good clay at back door and good market at front door. This is an opportunity that you don't often run up against. Plant now running. Come and see or write,

S. H. RECORD,
3 1 cm Charleston, Ill.

FOR SALE—One Freeze Union No. 1 stiff mud brick machine with automatic cutter. One 100 H. P. New York Safety high speed automatic engine. One 60 H. P. Chandler & Taylor engine. One 15 H. P. Westinghouse automatic engine. One 80 H. P. Chandler & Taylor tubular boiler. One 60 H. P. feed water heater. Two duplex boiler feed pumps. One deep well steam pumping engine. One 6 H. P. Cushman gasoline motor. One hand repress. All in good condition. Address

LINCOLN BRICK WORKS,
4 3 d Lincoln, Neb.

FOR SALE—One Chambers' Bros. fifty thousand capacity end cut brick machine with automatic cutter In good running order. Price $500, F. O. B. cars. One Richardson double die repress in first class condition, $350.00. Also dryer cars, Westinghouse engine, etc. No reasonable price refused. Address

HOWARD-PARK BRICK CO.
4 3 c Chattanooga, Tenn.

FOR SALE.

Complete brickyard equipped with wire cut and soft mud machinery, 12 acres ground with clay enough for a life time. Good market for brick in a growing city. Owner has other business, wants to sell all or interest in business to right man who can take full charge. Address,

ERNEST CARSTENS, Owner,
1422 Bellevue Ave.
4 3 d Seattle, Wash.

FOR SALE.

One 20x30 inch Hamilton Corliss engine. Good as new. One E. M. Freeze 50,000 brick machine, with three cutting tables, and several dies. Has been run but a few months. One Richardson repress, has never been operated. This is a rare chance for any person in the market for brick machinery, as all of it is modern and has not been run enough to injure any of the parts. Will sell all or part.

For attractive prices on above write or see,
THE AMERICAN SEWER PIPE CO.
4 1 dm East Akron, Ohio.

(Continued on Next Page.)

FOR SALE, WANTED, ETC.

WANTED—Small additional capital by dry press brick manufacturing company, having six month's output sold ahead. Bank references. Rated Bradstreets and Dun's first credit. Can use services of one or two good men, foreman, shader or burner, with capital to invest. Address, J. & P.
4 1 d Care Clay-Worker.

WANTED.

Manager for Brick Plant, at Thurber, Texas. Capacity of plant 100,000 dry pressed and 75,000 paving brick daily. None but men with large experience, ability and sobriety need apply. Address W. K. Gordon, General Manager, Thurber, Texas.
2 3 d

TO BRICK MANUFACTURERS.

An opportunity to make some money. I have on my farm a quantity of shale suitable for the manufacture of dry pressed brick. Would like to correspond with parties who would take it up and work it. Address R. H.
2 3 cm Care Clay-Worker.

FOR SALE—First-class dry press brick plant, located at Springfield, Mo. Boyd four-mold press, Frost nine-foot dry pan, one Dunlap screen, 25 H. P. engine, 60 H. P. boiler; and trucks to handle 22,000 brick. For sale cheap. Address,
GEO. D. McDANIEL,
2 3 cm Springfield, Mo.

FIRE CLAY LANDS.

FOR SALE—500 acres land underlaid with fire clay and coal, which can be mined cheaply. Near main line of N. Y. C. & H. R. R., in Pennsylvania. For lease on royalty at low price per ton. Address owner,
Box No. 308, Williamsport, Pa.
2 4 cm

FOR SALE OR RENT—Fully equipped yard for manufacture of red building brick located near good market: capacity about 40,000 per day; about 15 acres of good clay; machinery, dry racks and kilns nearly new; reason for selling, present owners engaged in other business occupying entire time. If unsold, will rent use of same to right party per M. basis. Address at once,
NANTICOKE BRICK & TILING CO.,
3 2 d Union, N. Y.

ONE THOUSAND ACRES OF "FIRE CLAY"

with lignite coal in abundance on adjoining land. Clay of the following analysis. with a vein running from four to forty feet. Some of it shows the same analysis, except has much less sand.

Analysis:

Telephone Connection.
CHEMICAL LABORATORY.
H. Endeman, Ph. D.
Analyses, Consultations and Researches.
23 Williams St., N. Y., Aug. 9. 1904.
No. 10134. Certificate of Analysis
For F. M. Greene, Atlanta, Texas.

I have examined the sample of CLAY marked as stated below and find the following results:
It contains in 100 parts by weight:

Alumina	19.88	CLAY.
Silica	20.95	
Hydrate water	6.03	
Oxide of iron	0.74	
Alkaline earths and alkalies	2.22	
Coarse sand (sample)	35.00	SAND.
Dust sand	15.18	

This clay situated in Texas. Would like to put it in as stock with good people to develop it.

Samples and full particulars sent on application.
F. M. GREENE,
Atlanta, Texas.

MYERS & KERR, TORONTO, OHIO.
Practical kiln builders. Special attention given to tunnel driers, pan and boiler setting and all work pertaining to brick and sewer pipe factories.
4 6 c

FOR SALE—33 acres shale land, of best quality, located adjoining the Montello Brick Works plant, along Lebanon Valley railroad, 1½ miles from Reading. For further particulars, price, etc, address
READING,
4 3 dm Care Clay-Worker.

ROOFING FABRIC.

It is intended to manufacture colored roofing fabric or other similar covering for roofs. Gentlemen being versed in this branch and willing to manage the manufacturing, please write to K. S. 135, care of Haadenstein & Vogler, A. G., Frankfort, Main, Germany.
4 1 d

FOR SALE—An up-to-date brick and tile plant, consisting of a 50 foot vein of No. 1 shale clay, burning a first class paver and a beautiful red or buff face brick; 8 round down draft kilns; dryer equipped with waste and direct heat system; capacity 110,000; No. 1 Giant machine, 60,000 daily capacity; 125 H. P. Atlas auto engine; 280 H. P. boiler; 9 ft iron frame dry pan. On two railroads. Valuable coal deposit in connection with site. Demand very good. Reason for selling, I wish to retire.
W. C. BEEM,
4 1 cm Lehigh, Iowa.

FOR SALE.

A going, money making hollow block plant. Best location in Ohio. Also well equipped for face, common, paving and fire brick. Includes coal mine and 125 acres of four-foot Cambridge coal, overlaid with shale and underlaid with fire clay. Good prices and more orders than can be filled. Plant comparatively new and in excellent condition. Will be sold at $40,000, two-thirds original cost, one-half cash and one-half credit. Good reason for selling. Address
THE GUERNSEY BRICK AND CONSTRUCTION COMPANY,
4 1 cm Cambridge, Ohio.

WANTED—I desire properly labeled samples of a clean buff burning clay and of a red burning shale. Large quantities may be ordered. Address H. KOHLMANN,
4 1 d 648 Dunning str., Chicago, Ill.

WANTED—Position by a man experienced in making high grade face and fire brick furnace block, etc. At present employed making fire flashed face brick. Am desirous of obtaining a position as manager or superintendent with a good firm. Address FIRE FLASH.
4 1 d Care Clay-Worker.

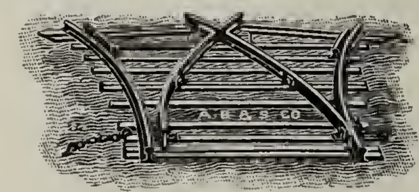
FOR LEASE—Fire and press building brick plant. Three hundred acres of land. Clay includes plastic, feldspar, kaolin, and high grade silica and shale. Capacity 30,000. Will lease for five years, 6 per cent on cost. Address
G. H. MILLER,
4 1 cm Chattanooga, Tenn.

FOR SALE.

Three Bonnot double die steam represses, good condition. One Wellington large size granulator, new. One Ross-Keller 4-mold dry press, practically new. One 30 H. P. engine, good condition. Three gable bottom dump cars, good condition. 4-mold Berg dry press, new. Address H. R.
4 1 dl Care Clay-Worker.

FOR SALE.

One Stedman 40-inch Disintegrator, cost $600; is in first-class condition; was installed and used for one week. Will sell at great sacrifice.
The Charles Mill Supply Company,
15 So. William St.,
7 tf dm New York City.



SWITCHES FOR SALE.

Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.
THE ATLAS CAR & MFG. CO.,
7 tf d Cleveland, Ohio.

WARNING.

Notice is hereby given that the process of drying and burning brick by first setting green undried brick in horizontal courses in a kiln to form a layer thereof, then covering and drying such layer, and successively coursing, capping and drying separate layers of green, undried brick upon the last dried layer until all the layers are thoroughly dried, and then burning, is patented in U. S. Letters Patent No. 485,199 to J. C. Kinzel, dated Nov. 1, 1892, and all persons are hereby warned against using such processes without grant or license from the undersigned owners of said patent. Unauthorized use of the patented process will render the user liable to an action for infringement and the payment of damages to the owners of the patent, whose rights thereunder will be strictly enforced.
J. C. KINZEL,
J. S. KRAUSS.
Box No. 271. 128 Logan St., Knoxville, Tenn.

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol XLV. INDIANAPOLIS, IND., MAY, 1906. No. 5.

Written for The Clay-Worker.

BALTIMORE BRICK MANUFACTURERS AND THE RESURRECTION OF BALTIMORE.

A COMPARISON of former Baltimore with the present is a contemplation to stir the blood of every business man. Practically every lot on the eighty-six blocks of buildings which were destroyed by fire two years ago, February 7th and 8th, is adorned with a structure far surpassing the old. The buildings which were on the tax books at an assessed value of $12,908,300 now make the showing of $20,000,000, while the land then assessed at $3,000,000 now stands at $9,000,000. The old dwellings that had for convenience been turned into business buildings have been replaced by modern structures; narrow streets retarding commercial progress have been succeeded by broad thoroughfares, and a general air of prosperity is bespoken everywhere.

The population of the city has increased 20,000. A $6,000,000 dock loan has been provided, while $10,000,000 will be invested in sewers (ten years' work), $2,000,000 in annex street improvements, $1,000,000 in parks, and it is possible that there may be $5,000,000 loan for street pavements; $1,000,000 for schools, $1,000,000 for new fire department buildings, another $1,000,000 for parks, and $6,000,000 for water service improvements. Never before in the history of Baltimore has there been such a demand for houses. Great expenditures have been made by private individuals in dwelling constructions and in the development of suburban property.

The Maryland Terre Cotta Company was organized last September with the following officers: J. J. Kelly, president; H. B. Boyd, vice-president, and W. G. Tyson, general manager. Their contracts call for terra cotta for Baltimore, Washington, Virginia and Philadelphia, and include ornamental terra cotta for many schools, public buildings and residences in Baltimore and neighboring towns. Mr. Tyler, secretary of the company, informs us that they are doubling the capacity of their plant and that they are making a specialty of granite terra cotta.

Heroic Terra Cotta Statue Executed by the Maryland Terra Cotta Company.

The Potee Brick Company, whose plant is situated at Curtis Bay, turns out 10,000,000 common red brick per year with their Martin machine. Their four kilns have a capacity of 250,000 to 400,000 brick each. They work under cover almost entirely the year round.

Bricks are not bringing exceptional prices, in spite of the amount of building progressing—$4.80 delivered. Ten million bricks delivered in New York, with the freight of $5, bring better prices than those delivered at the builders in Baltimore. They have been supplying some of the 26,000,000 bricks required for the Naval Academy at Annapolis, and last year sold 6,000,000 bricks to the Chambers Brick people.

Business is brisk, and, while this yard supplies many bricks for building operations in and around Curtis Bay, yet many are sent to outside cities—New York, Washington and others. Roland R. Marchant, the secretary of this company, kindly and courteously gave the foregoing information, and we thank him for same.

The Baltimore Brick Company, Indiana Trust Building, report business good and prospects even better. Mr. Albert D. Klein of J., of the Champion Brick Company, states that they have all they can do supplying bricks for local work.

Mr. Bartgis, the president of the Vitrified Clay Company, 22 Builders' Exchange, reports that they have recently enlarged their plant and also placed a new plant for vitrified bricks and face bricks.

Burns & Russell, brick manufacturers, with offices in the American Building, seem to have supplied most of the bricks for the surrounding large business buildings. They can surely say, "We have helped to rebuild Baltimore." It would take too much space to give a list of buildings furnished by this company since the fire. Suffice it to say, it includes many of the most prominent buildings in the city. Their plant turns out 20,000,000 brick, using a Chambers machine. Their eight kilns, stacking the bricks forty-six high, have a capacity of 180,000 each. At this yard they work all the year round. They have turned all their terra cotta business over to the Maryland Terra Cotta Company.

The directors of the Maryland Brick and Supply Company, of Frederick, Maryland, have organized with the following officers: President and manager, Calvin E. Schildnecht; vice-president, Harmen L. Gaver; secretary, Grayson H. Staley; treasurer, Emory L. Goblentz. They anticipate having their plant in full operation by July 1.

The Standard Terra Cotta Works, whose Baltimore office occupies Room 23 Builders' Exchange, secured the contracts for twenty-two of the largest of the new buildings erected since the fire.

Yard Office of the Burns-Russell Brick Company.

The members of the Baltimore Builders' Exchange spent Easter Monday at Keifer's Park in jolly good fellowship, celebrating their annual picnic. These outings can have none but good results. The members are brought into closer bonds of friendship and made to feel the aims and inspirations of business. Each and every one will receive some material benefit from the effort to advance and expand. Organizations such as the Builders' Exchange promote harmony and a unity of effort, and such outings as that of Easter Monday enlarge the possibilities of the organization. M. E. LOCKINGTON.

Written for THE CLAY-WORKER.

MR. MURRELL DOBBINS RETIRES FROM THE BRICK BUSINESS.

THE MURRELL DOBBINS brick plant, situated at Twenty-third street and Passyunk avenue, Philadelphia, has been sold to the Philadelphia Brick Company, Twenty-fifth street and Passyunk avenue, of which William R. Chapman & Sons are the owners. The sale includes all of the improvements, machinery, about 3,000,000 bricks on hand, and the lease hold, which covers about seventeen acres of the best located clay bank in Philadelphia County.

William Chapman is an extensive builder and a man of wealth, who uses almost all of the bricks which he manufactures. The two yards which he now owns will give him a capacity of about 25,000,000 bricks per year. He has taken possession of the yard and is making extensive improvements and anticipates running both of his yards up to their full capacity.

Mr. Dobbins has also disposed of his Kinkora, N. J., brick plant, consisting of some thirty-seven acres of ground, to Mr. David Harper, of Newark, N. J. Mr. Harper is a large builder and contractor, also a material man. It is his intention to spend considerable money on this yard to increase its capacity.

This closes out Mr. Dobbins' entire brick business. He is desirous of being relieved of details that, on account of labor troubles, have become very annoying. Mr. Dobbins has been in the brick business for the last thirty-eight years, attending to the details of the work very closely. Outside of his pottery, he will occupy himself with his stock farm and other interests with which he is connected. As a member of the Board of Port Wardens, also a member of the Board of Public Education, and Inspector of the Eastern State Penitentiary, his time will be fully occupied.

One of his present great interests is the inauguration of trade schools in Philadelphia, making them a part of the system of public school education. The matter has passed the board and arrangements are now being made to organize and start the school in the school building at the corner of Twelfth and Locust streets, which will be opened in September. There will be both a day and night school. The evening classes will be exclusively for boys who are employed during the day, while the day school will consist of a three years' course. In addition to the trades, reading, writing, mechanical drawing, arithmetic, physics and the study of materials will be taught.

The Thew Steam Shovel at Work on a Baltimore Plant.

This is something entirely new in Philadelphia, although there are several schools of the kind in other parts of the country.

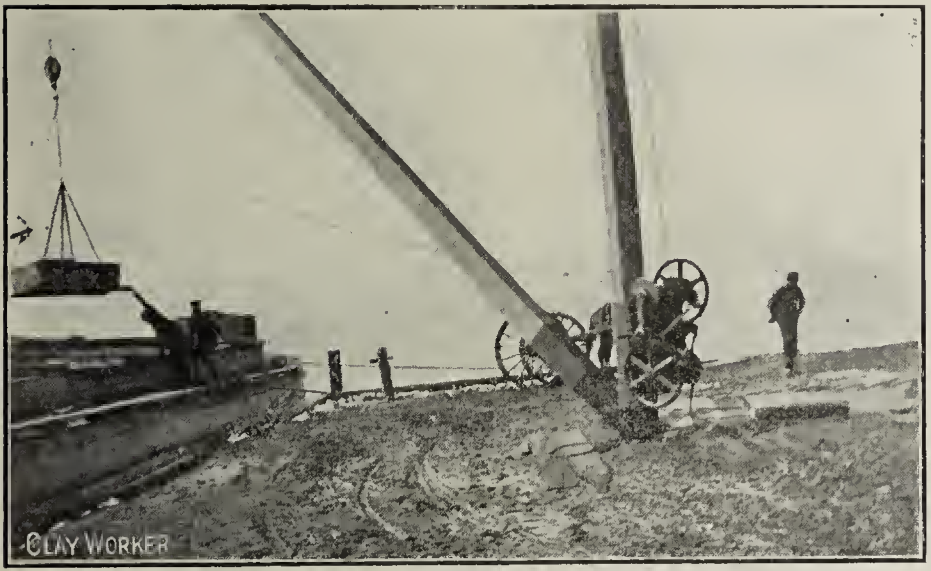
BUILDING A NEW BRICK PLANT.

J. F. Osborne, of Corinth, Miss., who last year bought the yard of McCord & Brakeman, will completely remodel his plant. He has placed his order for his power, consisting of 100 H. P. engine and 125 H. P. boilers, with the Corinth Engine & Boiler works. His machinery will be furnished entirely by Chambers Bros. Co., of Philadelphia, and will embody the most economical methods of handling and preparing the clay. A heavy iron and friction hoist will be placed where the cars of clay holding 1¼ yards can be easily dumped into a No. 2 granulator. This machine receives the entire contents of the car and thoroughly mixes the clay and cuts up all the large lumps, thus reducing the clay to such a condition as to enable the disintegrator to more thoroughly perform the duties for which it is especially built—that of pulverizing the clay. When the clay is dumped into a bin and fed with shovels into the disintegrator it necessarily works a hardship on this machine. The large lumps will not pass readily through the rolls, and consequently the machine is first overloaded and then running empty. The granulator eliminates all this trouble, secures a steady feed of partly pulverized clay and takes all of the heavy work off of the disintegrator. The disintegrator feeds into the pug mill and the pug mill into the number 5 end cut machine, In this arrangement, Mr. Osborne has been able to do away with the troublesome elevator belts. The drying will be done with the Reid System and will have a holding capacity of 300,000.

Mr. Osborne expects to put up several up-to-date kilns, just what kind, he has not fully decided. In the future he expects to build a continuous kiln. The yard will have a daily capacity of 35,000 and is located in a section of Mississippi that is building up fast and has long felt the need of such a plant as Mr. Osborne is building.

WHENCE THE POSTAL DEFICIT.

We hear a great deal about the annual postal deficit, because of the second-class mail matter and the rural free mail delivery. The fact is that express companies will carry newspapers at half a cent a pound and magazines at a cent a pound, pay the railroads out of this and make a profit for themselves. Yet postal officials declare that the government pays the railroads five cents a pound for carrying this second-class matter, and then resorts to all kinds of ridiculous devices to transform legitimate papers, carrying supplements, into merchandise so as to charge a higher rate. Why can there not be a move put on foot to make fair, reasonable contracts with railroads instead of constantly worrying legitimate publishers with hard and ridiculous rules to the injury of advertisers and the limiting of business?



Loading Brick on Boat at Burns-Russell Yard.

The New York *Journal* in treating on this constant cry about a postal deficit tells some useful and wholesome truths in the following paragraphs:

The managers of the postoffice announce tearfully that the rural free delivery system will cause a deficit.

Rural free delivery enables farmers to get mail regularly. It enables a good many people to make a respectable living—and, above all, it keeps the inhabitants of the nation in touch with each other and with civilization.

Where the rural free delivery goes there is no more of the hideous country isolation, no more of that dreadful unbroken monotony which fills Western insane asylums with farmers' wives.

Postoffice officials and others more or less interested attribute to the rural free delivery system the national postoffice deficit, and attack rural free delivery by implication. They are wrong.

In the first place the rural free delivery system should be constantly extended—even if it does cause a deficit.

In the second place it is not rural free delivery which is at fault, but the national system of allowing the railroads to swindle the Government through the postoffice.

The fifteen millions deficit is a very small fleabite compared to the enormous sum that the railroads steal every year from the Government by connivance with public officials and with dishonest men in Congress.

The Government hires its mail cars from the railroads and pays for a year's rent as much as the car costs to build.

And those cars, outrageously overpaid for by the Government, are such flimsy death traps that no company will insure the lives of the postal clerks that work in them.

For hauling those mail cars on the same train that hauls private express cars the railroads charge the Government anywhere from 1,000 per cent up in excess of the rate that they charge the express companies.

The trouble with the postoffice department is this:

Those who represent the people are in league with the railroads to rob the people.

And, in spite of that, the national postoffice gives an infinitely better and infinitely cheaper service than is given by any private corporation of any kind whatever.

SOME PRACTICAL THOUGHTS.

It seems singular at first thought that the soil which suffers most from surface water in a wet season, often, suffers most from drouth. Yet a little reflection will account for it. The soil saturated with water runs together and brakes hard as soon as the surface soil is relieved of its excess of water by evaporation, the roots cannot easily penetrate the soil and the loss of moisture goes on rapidly, the hardened soil favors a more rapid capillary action. The soil soon dries out and the roots have not penetrated to any considerable depth, or width, on account of the soil conditions. The air has had little or no circulation in the soil, and the plant food is not in an available form for the growth of the crop when extreme droughts occur, and our crops suffer. Some people are quite ready to attribute the cause to too much tile draining when the facts are in favor of more tile draining. The tile drained soils suffer least in time of a drouth and grow the largest crops. A neighbor of mine who has put in several miles of tile drains, says he is rather pleased to have a drouth come occasionally, for the reason that his crops are not damaged to any extent and he almost always gets more money for his crops, and the greater capillary action of the soil brings up fertility from greater depth and leaves it near the surface for further crops. He says he has observed that the wheat crop, following a drouth, is almost invariably a heavy one.

The Baltimore Brick Company's Yard Office No. 13.

Besides, deep drainage serves to conserve the moisture of the soil. The more tile draining the better.

HENDRICKSON.

Co-operation is the name of the bright idea that is frequently badly abused.

Written for The Clay-Worker.

THE BRAZIL CLAY CO., BRAZIL, IND.

ABOUT TWO MILES west of Brazil, and conveniently close to the interurban railroad and the Brazil-Terre Haute branch of the C. & E. I. R. R., is located the new plant of the Brazil Clay Co. Every device known to modern clayworking has been installed that would reduce the cost of the products, and it is safe to say that it is one of the most up-to-date plants of its kind today in the world.

The company is incorporated for $150,000, and no expense has been spared to make it complete in every detail.

The products will be high grade face brick of various shades, ranging in color from a dark chocolate to a light gray. Under clays will be used, however. The surface clay, 30 feet in thickness, is of very fine quality for red builders, but will in all probability not be used.

All materials will be hoisted from their mine, which is 100 feet deep, and is located not over 40 feet from the main buildings of the factory. The clay is handled automatically from the bottom of the mine until it is made into brick, free of the cutting table. A great deal of credit is due Mr. A. H. Zimmerman, general manager of this plant, for creating several new methods for handling clay through its process of manufacturing, and demonstrates that no little thought has been given the several systems of conveyors. From the cutting table the products are handled in the method common to all modern clay plants where the waste heat is employed. All machinery is driven by rope transmission, and is proving a great success.

General View of the Plant of the Brazil (Ind.) Clay Company.

The Dodge Manufacturing Co. supplied all pulleys used throughout the entire plant.

Only machinery for one-half the plant's full capacity was in place at the time of my visit. The capacity will be 150,000 per day and will require 32 round down-draft 40 foot kilns. The machinery is all extra heavy and is the best type manufactured by the concerns supplying same. All clayworking machinery was supplied by the Bonnot Co. of Canton, Ohio, with the exception of the cutting table, which was purchased from the E. M. Freeze & Co., Galion, Ohio.

The land upon which the plant is built comprises 160 acres, and is beautifully located, being very level over two-thirds of its surface, and then breaking abruptly on the north into a deep valley, offering splendid drainage for the factory, and in which is located the C. & E. I. R. R. A switch from this road was built to the plant, forking on either side, one track running through the kiln yard, the other between the mine and main building.

In sinking the mine, the following materials were passed therein: 30 feet of surface, 12 feet of sand rock, 44 feet blue shale, 2 feet coal, 12 feet under clay. The under clay is used exclusively at this time in the manufacturing of face brick, but there is every reason to believe that the 44 feet of blue shale is a very fine paving brick material, but owing to the newness of the plant and the various duties arising, this material has not been thoroughly tested. After the under coal clay is moved it will be an easy matter to shut down the roof in the rooms, thereby securing this shale at a very low cost.

The clay is mined by blasting, and as many as 40 tons being torn loose at one blast. It is then loaded into end dump cars and hauled to the cage where it is hoisted to the tipple by a Crawford & McCrimmon Co. double engine hoist. Upon reaching the tipple, the clay is dumped automatically into a weight-pan, the clay is weighed and then released by the weighman, to fall upon a chute that carries it to an American Road Crusher of 500 ton daily capacity. which is installed in the crusher house some 30 feet east of the mine, as shown in Photograph No. 1. As the clay passes from this crusher it is caught up by a Stevens & Adams elevator and carried to the height of 40 feet in this building, to be delivered onto a belt conveyor, (located just to the right of crusher house) which carries the clay into the storage shed, where, by means of a simple arrangement, the clay is deported at any desired place. This conveyor is 85 feet long, the belt being 18 inches wide.

Viewing the plant from the southeast, the entire east side of the factory and kiln yard can be plainly seen. Under the system employed, all kilns are of the round down-draft type, 40 feet in diameter, and these kilns are divided into batteries of eight kilns each, each battery has a main smoke flue paralleling it, and all kilns connecting to main flue which is connected to the stack, the stack being 11 x 11 feet square, 75 feet high; the main smoke flue, 24 x 36 inches; kiln flues, 18 x 24 inches. The stack is located about half way, and 25 feet from center of battery.

A forced draft system of burning has been installed. An American blower fan, 100 in. in diameter, furnishes draft to this system, which consists of a line of 24-inch pipe laid paralleling the smoke flue, and thirty feet from kilns. Laterals 12 inches in diameter are extended towards each kiln; as they approach the kiln they are forked and a line of pipe is run around either side of the kiln to the opposite door, where it terminates. The lateral is tapped at each furnace by a four-inch pipe which extends up to and underneath the grate. By means of a damper in the lateral, the air can be admitted in quantities desired at the different stages of burning. The laterals are reduced in size as they fork around the kiln, from 12 to 10, 8 to 6 inches. The reason for reducing these pipes is that a more even draft can be maintained at each furnace.

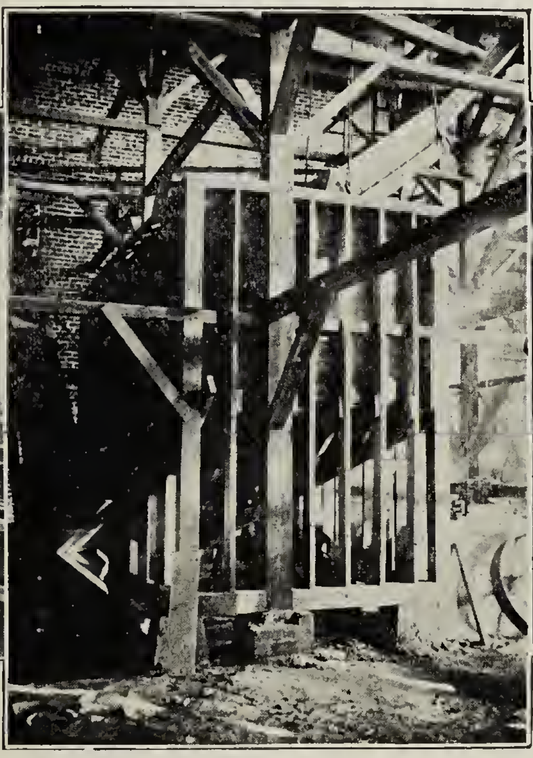
Block coal slack is used throughout the entire burn.

Viewing the plant from the west, the entire plant can be seen to good advantage. At the extreme left is the frame building, inclosing the American Blower Fan. Immediately to the right is the waste heat fan, 14 feet in diameter, supplied by the Crawford & McCrimmon Co.

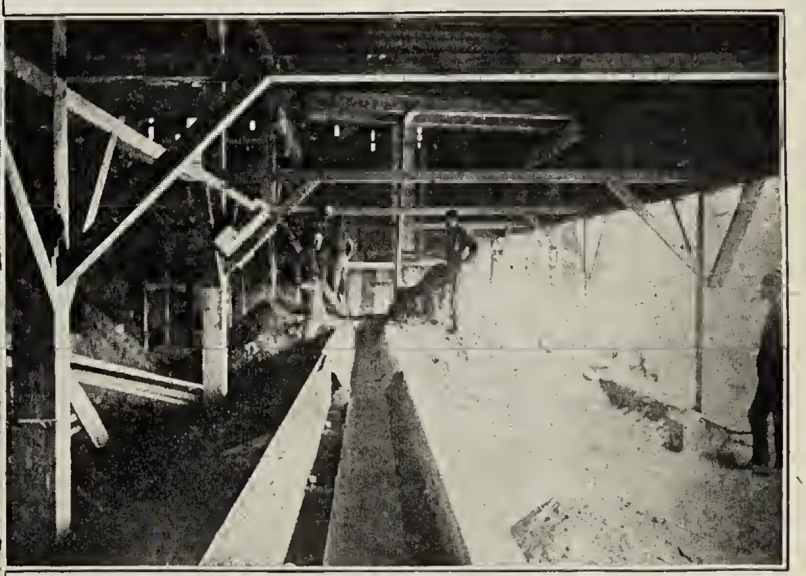
The dryer to the right of waste heat fan is very substantially constructed of hollow building block and iron and is 110 feet long by 38 feet wide, containing 8 single tracks; height from rail to roof being 5½ feet. Brick are dried in 24 hours. 250 tunnel cars of the double deck type are in service; their cars were supplied by the Bonnot Co.

Interior Views Taken at the Brazil Clay Company's Plant.

The Machine Room.



The Clay Bin.



The Clay Conveyor.

The exhaust fan, to the right of dryer, is of the same pattern as the waste heat fan, differing only in diameter, this fan being 10 feet in diameter.

To the right of the exhaust fan is the main work room, which is 60x100 feet. Great care has been exercised in constructing this room so as to make it roomy, light and convenient. The machinery in place at this time is as follows: One 12ft. pug mill, one No. 6. combined machine, one 16 vice automatic cutting table, one repress, two other represses being added. The capacity of this machinery is 75,000 each ten hours. On the right, in Photograph No. 2, can be seen Mr. Ragan and Mr. McCarrel, of the Ayer & McCarrel Clay Co., who are paying the new company a friendly visit, looking it over with Superintendent Carlyle. It is indeed most gratifying to see this friendly feeling manifested among competitive concerns, and demonstrates the broad gauged minds and the good will of these gentlemen, which has done much to place them upon the high road to the success that they so richly deserve and enjoy.

To the right and west of the work room is the engine room, 33 x 36, containing over 400-horsepower Alfree engine, maine drive, and one 25-horsepower Alfree engine and dynamo, directly connected, which furnishes lights for factory and mine. The Alfree engine is manufactured at Irontown, Ohio; it is incased and runs in oil, and is winning many friends among the clayworkers, as it is impossible for dust to reach the working parts.

The boiler room is 36x42 and contains two 125 H. P. Erric tubular boilers, carrying 125 pounds steam pressure each. A coal bin, 10x42, is conveniently at hand. Coal is either dumped direct from the mines or unloaded from railroad cars into bin.

As the clay is delivered into the clay shed, it falls upon conveyors, as shown in View No. 3. Each pan has an individual conveyor 40 feet long; the side walls are built of brick and cement, the belt being 14 in. in width. If at any time the pan should be stopped, or the clay coming from the mine faster than the pans can grind it, short two-inch planks are placed across the conveyor and the clay allowed to pile up.

The clay is fed into 9-foot pans and from here elevated to a height of 38 feet to a piano-wire screen of 175 tons daily capacity as can be seen in Fig. No. 7, above the ground clay storage bin. This screen is a great executor and is a pleasant surprise to all who have seen it in operation. It is stationary, and having no moving parts, is always ready for business. This screen was supplied by the Bonnot Co., and is 3½x6 feet.

The ground clay storage bin has a capacity of 200 tons and is built so as to feed upon a belt conveyor. At the lower left side the clay runs through a wood trough to a Dodge Conveyor, which carries the clay up to the second floor to the pug mill. Cold water is used to bring the clay to the proper plasticity.

Water for the entire plant is secured from a well 600 feet deep and pumped into a storage tank holding 50,000 gallons. The water is of an artesian nature and is fine for clayworking purposes.

The officers of the company are as follows: Wm. Zeller, president; Wm. Snyder, secretary and treasurer; A. H. Zimmerman, sales agent; Thomas Rouse, formerly with the Southern Fire Brick Company, of Montezuma, Ind., general manager.

The man who makes it a practice to look on the bright side of life not only has an equal chance with the other fellow of getting a fair share of this world's goods, but he has a much better time while he is at it.—Exchange.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

THE BRICKMAKING INDUSTRY of the Pacific Coast will be greatly stimulated by the earthquake which caused much damage throughout a considerable portion of California within a radius of say seventy-five miles of San Francisco. In the city the damage from earthquake and fire combined was something stupendous. It is estimated that about three-fourths of the valuation of buildings in the city was destroyed. The total amount of losses of every kind has been variously estimated at something around a billion dollars. The fire insurance is estimated at about $200,000,000 and there will be scarcely any salvage. If 90 per cent. could be realized on this, there would be no difficulty about rebuilding and resuming business. If six months' time is required to complete adjustments and pay from 65 to 75 per cent. on the losses, it will be very embarrassing to some of the business men.

Ruins of the Franciscan Church, San Francisco, Cal.

The common brick plants are rapidly preparing to resume operations after the winter shut-down. They have been burning all winter, the usual large supply of green brick having been on hand in the sheds. There is also quite a carry-over of common burned brick from last season.

Untold millions of brick from the thousands of burned buildings will be available for use in rebuilding when cleaned, but, of course, not very many will be used in the better class of new buildings.

The offices of all the brick, terra cotta and pottery companies, which were located generally in the vicinity of Montgomery and New Montgomery streets, were burned out. The Steiger Terra Cotta and Pottery Works office, the offices of Gladding, McBean & Co., of the Carnegie Company, and of various other concerns were included. Some of these have already opened temporary offices.

Gladding, McBean & Co. have opened offices at 1611 Franklin street, San Francisco, and at Fourteenth and Webster streets, Oakland. The company's branch plant at Bryant and Brannan streets was but little damaged and will be opened within a few days.

The Steiger Terra Cotta and Pottery Works saved a good part of its plant. Eleven kilns are now running under full capacity and they have a twelfth under construction at South San Francisco. The main office of the company is now located at the San Francisco yard at the corner of Eighteenth and Division streets.

The Unique Brick and Tile Company was incorporated last week at Portland, Ore.

John Schumacher, of the former Schumacher-Waddingham Company, has begun suit at Los Angeles, Cal., for $25,000 damages against his former partners, J. H. Waddingham and W. H. Doty. The partnership was formed in 1905 for the purpose of engaging in the manufacture of terra cotta, plaster and wooden ornaments. Mr. Schumacher alleges a conspiracy to force him out of the partnership.

A. F. Fitzgerald, D. D. Barnard and others have organized the San Luis Brick Company for the purpose of manufacturing brick at San Luis Obispo, Cal. A plant is now under construction at that place which will have a capacity of 36,000 bricks daily. P. R. Houdek will be foreman of the plant.

The Rose Firebrick Company, of Oakland, Cal., lost its complete plant by the earthquake. The plant was built on unsteady ground and proved an easy prey to the earthquake. The piles of brick and mortar crumbled and the framework of iron and sheeting was twisted out of shape.

Articles of incorporation of the Albuquerque Pressed Brick and Tile Company have been filed, with a capital stock of $200,000, by W. J. Johnson, B. Ruppe, E. C. Allen, A. Wayden and M. E. Hickey, all of Albuquerque, N. M. The term of existence of the company is fifty years and its object is to manufacture and sell brick and tile and carry on a general brick and tile business. The first carload of machinery for the new plant has arrived and other machinery will arrive during the next week.

Articles of incorporation of the Pacific Manufacturing and Supply Association, of San Pedro, Cal., have been filed, with a capital stock of $2,500. The officers of the company are A. P. Ferl, president; Chas. Nicolai, vice-president; P. Gaffey, secretary and treasurer; J. H. Dodson, general manager, and G. Alexander, superintendent. The company has acquired the old Alexander brick plant in the northern part of San Pedro and will improve it. A new oil-burning apparatus has been ordered. The company will manufacture brick, mortar and cement and do a general contracting business. An order for 400,000 brick has already been placed for the new Fraternal Hall which is being erected on Fifth street of that place.

The Holt & Gregg Company, of Redding, has been awarded a contract for 1,000,000 for the Balaklala Company's large smelting plant near Kennett, Cal. Sunset.

San Francisco, Cal., May 5, 1906.

THE DAYS ARE TOO SHORT FOR THIS "BUCKEYE."

Editor The Clay-Worker:

Enclosed herewith find $2.50 to cover the cost of a years' subscription and one of your pocket kits. I feel as though we could hardly get along without The Clay-Worker, the only trouble I have I cannot find enough time to read it all. Our business is very good at present, we have several large jobs which will take a good many common brick. We have a good many brick on hand at present, but are preparing to run our pressed brick plant to its full capacity the coming season. S. P. Stillwaugh.

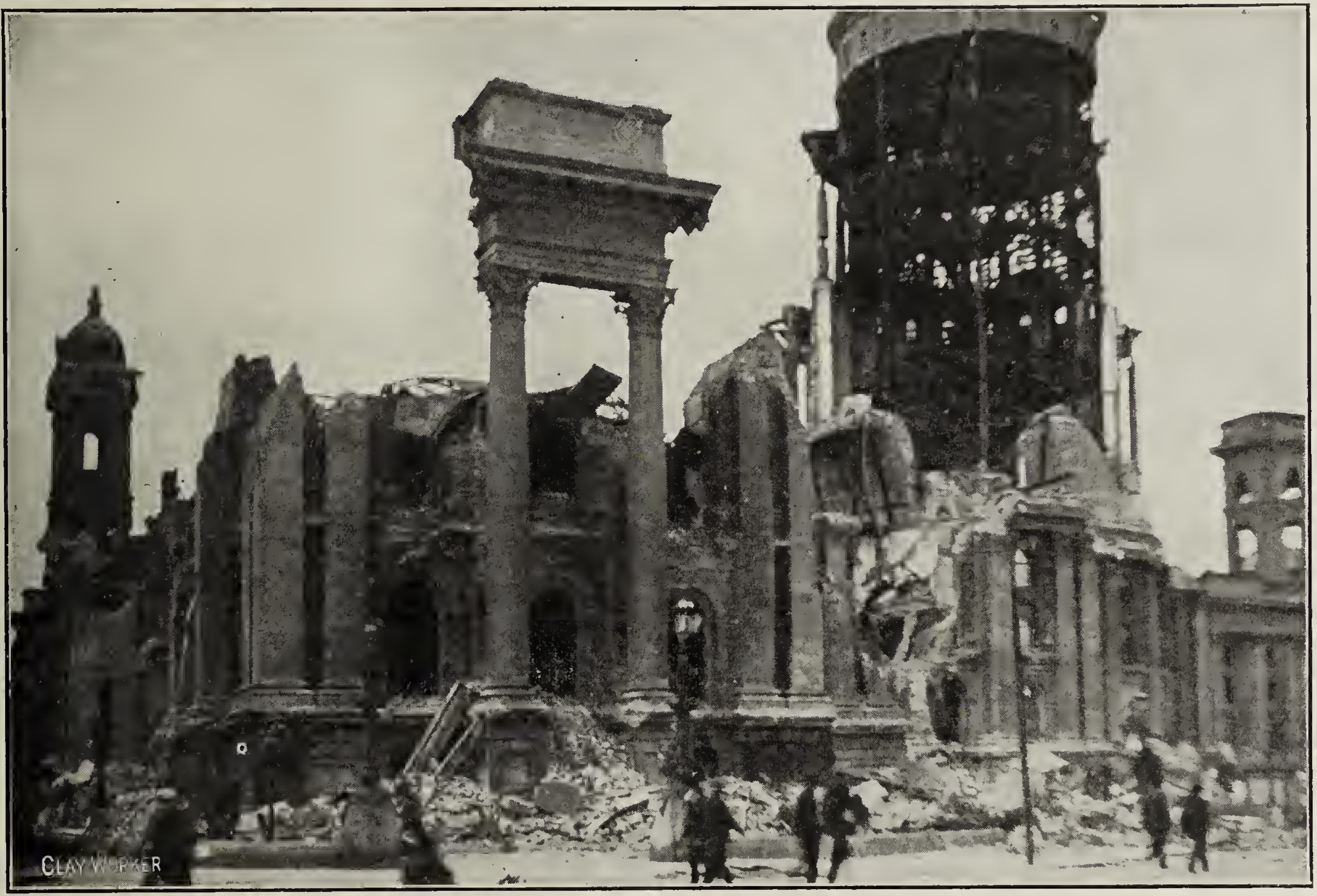
Written for The Clay-Worker.

IF YOU ARE THINKING OF STARTING A BRICK PLANT, YOU WILL DO WELL TO OBSERVE THE FOLLOWING "DON'T FAILS":

DON'T FAIL to buy and read all the literature on the material you expect to manufacture. Don't fail to take all the trade journals; don't fail to read them.

Don't fail to attend the national convention, and, if possible, attend at least the State convention in which you are located.

Don't feel that because you have found clay or shale on your land that you have found such a priceless treasure that you dare not even tell your friends about it lest they should give away the secret, or if you do communicate the good news to your friends, it must be in a whisper lest some one will hear you. Don't feel that all other brick manufacturers are your enemies. You have no greater friends on earth. There is a fraternal good feeling among clayworkers toward and for each other which is hard to find in any other class of men.



The Dreadful Wreck of the San Francisco City Hall.

Don't fail to visit ten or twelve plants such as the one you expect to build.

Don't fail to introduce all the labor and coal-saving devices possible.

Don't fail to avoid a multiplied system of turntables and transfers; one transfer between the machine and dryer and one between dryer and kiln should be all that is necessary.

Don't fail to remember that because a man has been a success at one place he may not be for you; some men fail to adapt themselves under different environments. Don't fail to remember that he may have been only a tool in some one else's hands, and not the head.

Don't fail to have your agreement with the railway company before you turn sod for the plant.

Don't fail, if you are going to make paving brick, to know where you are going to find a market for your second grade and culls. Don't be flattered with the idea that you won't get any.

Don't fail to remember that after every precaution you may lose every cent of your own and other people's hard-earned money.

Don't be discouraged; there is money in the clayworking business, only get into it with your eyes wide open.

T. WELLS.

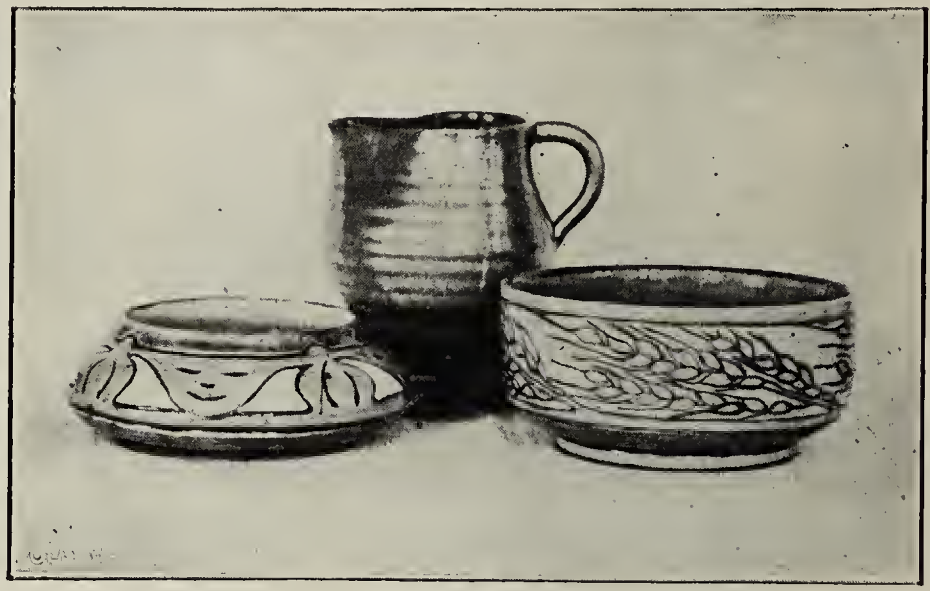
Written for THE CLAY-WORKER.

NEWCOMB POTTERY, A SUCCESSFUL EXPERIMENT IN APPLIED ART.

THERE IS A NEW movement in the industrial world that seems to promise remarkable changes in our manufactured products. Already it has produced some changes which seem almost revolutionary.

It may be described as a movement for greater beauty, simplicity and freedom in design—a reaction against that slavery to the machine which was characteristic of the manufactures of the last century. For the nineteenth century, great as it was in mechanical progress, had for its ideals only scientific accuracy and mechanical perfection. It aimed to conquer material powers and forces for man's use; and never before in the history of man were such "seven-league" strides taken toward the perfecting of machinery, in the lightening of labor, in the acceleration of manufacturing processes, in the economizing of effort. By means of machinery, of steam and gas and electricity, men learned to do easily and quickly and cheaply the myriad things that must be done for man to live in comfort, health and prosperity. And the thinkers of that day dreamed that when their machines were made perfect the Golden Age would come again—toil would cease and peace reign, when we could "press a button" and let a machine "do the rest."

The Artists' Room.



A Group of Newcomb Ware.

But that dream has proved as false as any other. Daily machines become more capable, more faultless, but does man grow happier, more content? Is his labor easier, his life more joyous? No one who has seen factory hands at work, or resting in the noon hour, will say so. The pale, listless, hopeless faces and forms of the factory hands in our big cities are not less pitiful than that of the "man with the hoe," nor less degraded. The negro slaves of sixty years ago, singing in the long cotton rows, the negro freedmen of the Mississippi "bottom lands" today, deft-fingered, laughing and careless, seem pleasanter sights than the weary men and girls who file out of a cotton mill at the end of a day's work. What interest can the millhand take in his monotonous task? How can his mind grow when the machine takes away all need of effort or of thought? All the output of each machine is alike; there is no room for the maker to look on his work and, God-like, to "see that it is good," and "very good."

So we find our century has its problems to solve, and it is a hard one, none other than this: How can we give back to the toiler the joy in his work, the interest in his life, the beauty his soul craves, which machinery, with all its blessings, has taken from him? For—and here is the vital point, which the scientists and inventors of the last generation could not see—man needs beauty as much as he needs bread and meat, clothes and fuel—if not more imperatively. No savage race can be found which does not adorn itself. And this innate craving for color and pattern is, somehow, not satisfied by machine-made products. Why? Because these, however perfect, speak only of unwavering repetition of senseless movements, against whose monotony the mind revolts. But each bit of handwork, wrought by human skill, tells of human patience, human ambition, human hope.

And because we are beginning to see these things which our fathers were blind to, there have come revivals of the handicrafts and efforts to restore design to its place in directing industry. People have grown impatient of the ugliness of wall papers, fabrics, tiles and carpets "made in Germany," or in America from German models. There is a demand everywhere for simpler, more appropriate, more restful ornament; for better proportion, more pleasing color, in all we use and wear.

Already the results of this demand may be seen in "mission furniture" and arts and crafts exhibits. Already books and posters show more regard for spacing and proportion, and Japanese canons are becoming widely known and have been adopted by some art critics and teachers. It would be interesting to trace the new movement in any direction, for it is vigorously alive and is working wonders in all departments of industry. But we must confine ourselves to one small but important manifestation of this new development of craftsmanship in a single industrial line—the potters' art, for it is of Newcomb pottery I am writing now, and its brief history is full enough to fill these pages.

Pottery is one of those industries which has gained most and suffered most by the introduction of labor-saving devices. For thousands of years the primitive methods of the potter were unchanged. Clay, kneaded and washed by hand, thrown on the wheel, glazed and fired by skill, not science, produced all the marvellous pottery of Japan and China, Italy, Holland, France and England.

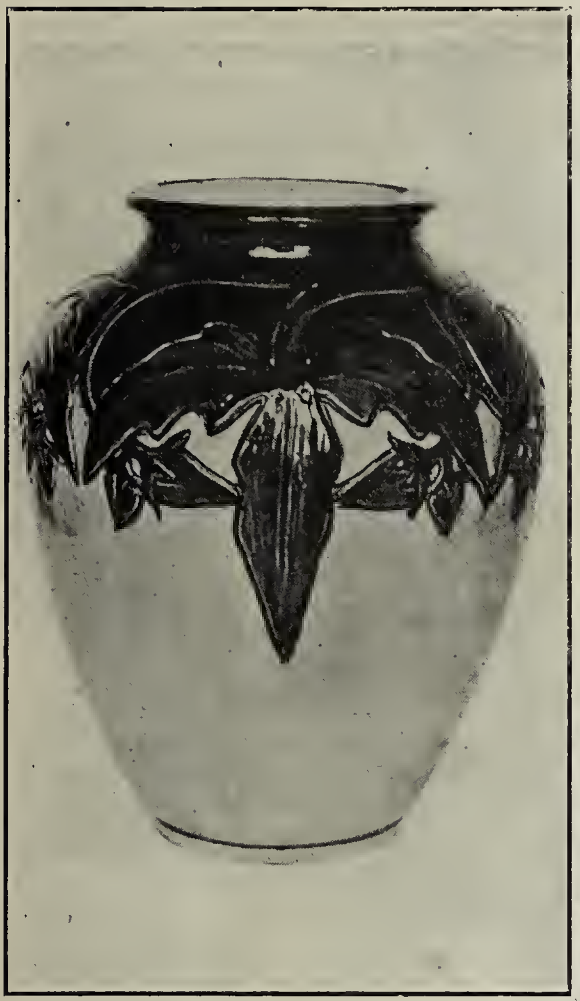
In the last hundred years machine processes have superseded these simple but laborious methods, and the potter is almost extinct. But chemistry and mechanics, though they have multiplied the output of commercial potteries and made possible many perfections of glaze and body, have not produced one piece of beautiful pottery. So those who within the last few years have sought to revive the art of making pottery have gone back more or less completely to primitive methods, using modern appliances as sparingly as may be. At the Newcomb Pottery, for example, the aim has been, from the first, to exclude commercial ideals, and, while putting the wares on the market and producing useful articles, to make simplicity and beauty of design and the preservation of the designer's originality the characteristics of the pottery which bears the Newcomb trade-mark.

How far these aims have been carried out the pottery itself best shows. Here are some characteristic specimens. The cuts do not, unfortunately, show the charming and harmonious coloring of the originals; it is mainly in soft blues and greens, with an occasional rich yellow or brown.

Newcomb Pottery is an outgrowth of the art school of Newcomb College, a branch of Tulane University, of New Orleans, La. Some eight or nine years ago it was found that the young women who completed the course in design in that school had no other use for their acquirements but teaching, and the authorities began to look for some practical designing as a field for their talents and skill. There was plenty of clay available in that alluvial land, and from one of the bayous a few score miles from the city a clay was procured which produced a cream-colored earthenware which proved admirably adapted to under-glaze decoration. A skilful potter with his wheel, to throw the shapes designed by the young women —a small kiln to fire them, many experiments to find a suitable glaze and to regulate the firing—were necessary, but these eventually, under the patient and enthusiastic supervision of Professor Ellsworth Woodward and Miss Mary Sheerer, produced a ware sufficiently interesting and attractive to win a prize in Paris in 1900.

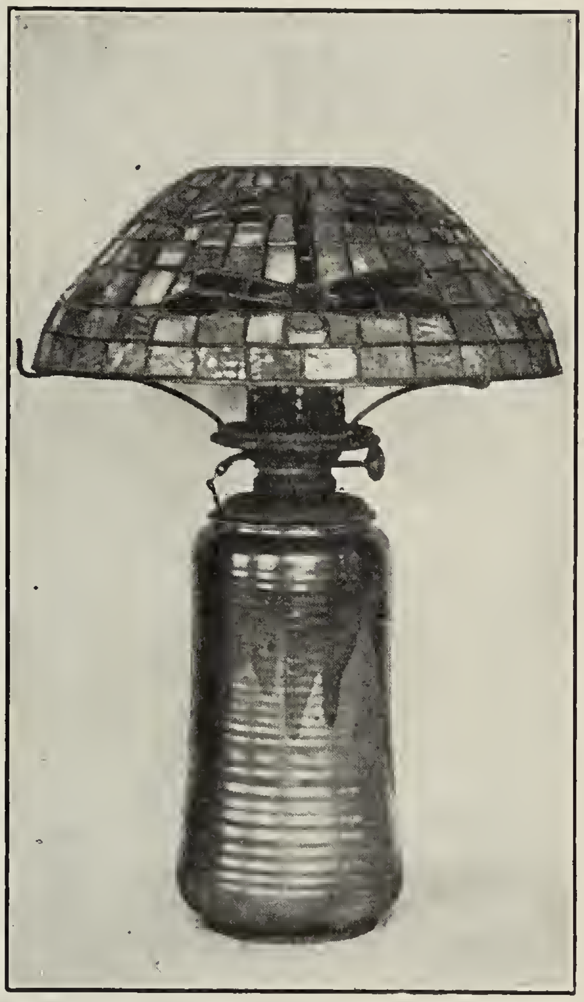
Then New Orleans woke up to the fact that here was something worth looking at, and presently from Boston and New York, Chicago and San Francisco, came demands for Newcomb pottery. So the experiment begun so modestly is now both an artistic and a commercial success. Its experiments go on; new colors, new effects in glazes, are from time to time essayed, not without deliberation, for the desire is strong to keep the Newcomb standard high, and no imperfect or immature work must go out with the Newcomb stamp upon it. Any work which does not meet the approval of the jury has that stamp erased and may not be sold in the pottery.

The cream-colored ware made from the clay of the bayou is still the most characteristic Newcomb ware, but there is also a white and a red ware made; the latter is decorated with colored glazes only, and some of the most artistic effects have been produced in this way by the chief potter of the pottery, Mr. Joseph Meyer, who was one of the medallists at St. Louis last year. The white ware is treated, like the cream, with underglaze washes of blue and green, in designs mostly based on the flowers of Louisiana, or its landscape elements. Pines and live oaks, cotton and rice, iris and jessamine and magnolia and water-lily yield fruitful suggestions to the young designers, and the vases and jars they make are rich and refined in color, simple in form, restful in effect; and they are found to harmonize admirably with the styles of interior decoration now in vogue.



A Typical Vase.

Entrance to Main Building, Newcomb Pottery.



A Newcomb Lamp.

Great care is exercised to keep the surroundings of the workers as pleasant, harmonious and cheerfully quiet as may be. The pottery itself is a beautiful building inside and out, a harmonious adaptation of the Spanish architecture, found all through the Southwest, to modern needs. Its red-tiled roof, its cool green and white exterior and cream and green interior—even the "Spanish bayonet" at the entrance, and the brass knocker on the door, combine to form a whole that is an inspiration to artistic effort.

The workers are all young women who have completed a certain number of years' work in the art school. They work under instruction till they have mastered the technique of the art of designing for pottery, and are then allowed to work alone, submitting the finished product to the jury, though the friendly interest of the instructors enables them to have criticism and advice at any time, if they desire it.

They are paid for accepted work a certain proportion of the price at which the piece is valued, and each worker is paid monthly for all work accepted during the month, for the pottery buys the work and assumes all risks.

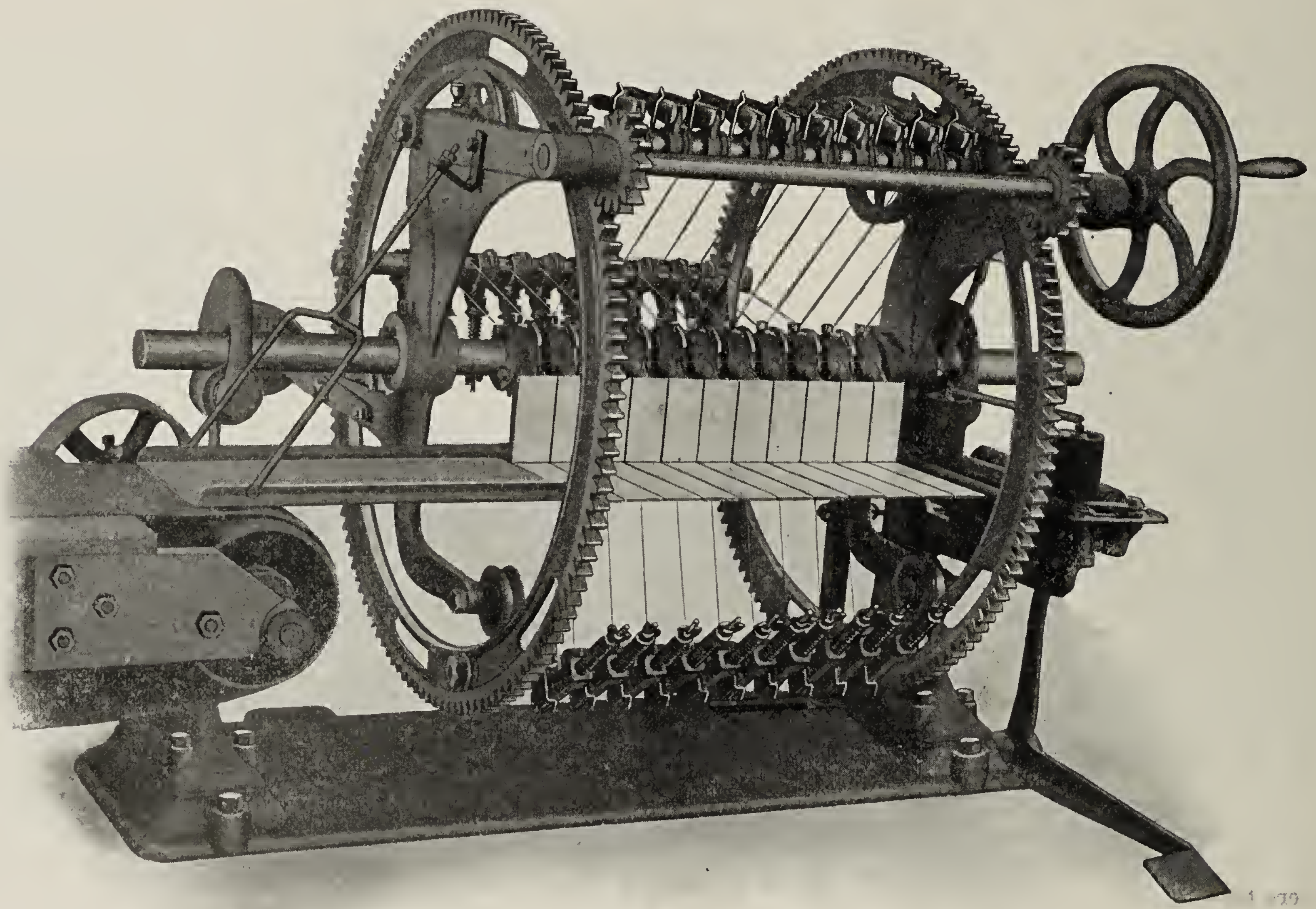
The heavy quality of the ware excludes teacups and saucers and other tableware from the aims of the designers. Newcomb ware is, however, admirably adapted to large forms —flower-jars, beer-mugs, fern-dishes, ewers and milk-pitchers, ink-stands, tea-pots and loving-cups. Some very handsome platters and fish-sets have been made, and tobacco-jars and lamps are also popular in this ware.

In St. Louis several exhibitions of Newcomb ware were shown, and prizes were awarded in the Mines and Metallurgy Building, in the Education Building, and in the Fine Arts Building. At Portland, again, the Newcomb pottery won a prize. These are only examples of the wide recognition which is rewarding the efforts of these pioneers in artistic craftsmanship in the Southwest. More and more are people coming to realize the beauty of simple design, restful form, unpretentious ornament, harmonious color; more and more they demand interesting and skilled handwork; more and more they realize that, unless the work is produced under wholesome and happy conditions, it can give neither joy nor delight to the user. So side by side the movements for good design in the work and for healthful conditions for the workers are revolutionizing the world of industry. ETHEL HUTSON.

The biggest mystery about the trade of bricklaying is how the man manages to get so big a share of money out of so small a share of the work of creating the brick building.

AN IMPROVED HAND-POWER BRICK CUTTER.

QUALITY OF PRODUCT is an important factor in brickmaking as in all other lines of manufacture, and every brickmaker, regardless of the size of his plant, should make the very best brick possible. The Reel Cutter which is illustrated, is offered to the trade by the American Clay Machinery Company, Bucyrus, Ohio, with a guarantee that, while a moderate priced machine, it will turn out as good brick as the larger and more expensive cutters. The principle on which this hand cutter operates is the same as with the larger capacity automatic reel cutters, which have been on the market some time, and which, it is claimed, cut brick more perfectly than any other device, owing to the radially set wires and other mechanical arrangements peculiar to this machine. This hand-power cutter is designed for small capacity plants turning out high grade brick. This cutter is known as No. 62 Hand Power Rotary Brick Cutter, and is designed to cut standard sizes. At a slight additional cost it can be fitted for cutting Roman brick as well. For full detailed description of the cutter, address the manufacturers, as above. Their ads will be found on pages 718, 775, 776 and 777 of this issue.



Improved Hand Power Brick Cutter No. 62.

Valuable Information in Clay-Worker.

Editor THE CLAY-WORKER:

Enclosed find check for $2.00 in payment for Clay-Worker ending February 1907. We are pleased to advise you that we have enjoyed the Clay-Worker and have had some valuable information from it. It pleases us just as much to be able to say that our business for the past year has been very satisfactory and prospects for the coming year are very flattering. Yours truly,

E. F. Hess, Gen'l Mgr.

Coffeyville, Kans. The Western Roofing Tile Co.

Written for The Clay-Worker.

ST. LOUIS BRICK AND BUILDING NOTES.

ALL THE BRICK manufacturers of St. Louis are as busy as they can possibly be. In spite of the labor troubles they are selling all the brick that they can turn out and some of them are refusing orders. The prospects are good for this condition of affairs to continue.

The armistice between the building trades council and the master builders was extended on May 3 by mutual agreement until May 10. The committee of ten each from the master builders and the council state that they are making progress and that a final agreement is probable.

The St. Louis Vitrified and Fire Brick Company has lately completed a number of improvements at their plant. They have recently made deliveries of fire brick for a new sugar plant in Arizona, coke ovens for a coal company in North Dakota, for several sewer pipe plants in eastern Illinois and western Kansas, and considerable fire brick for mining and smelting companies in Old Mexico.

The Evens & Howard Fire Brick Company reports that it is kept quite busy and is having a fine trade.

Mr. Will (Dixie) Scott, of the Scott Manufacturing Company, reports quite a satisfactory business. Inquiries are plentiful and sales most gratifying. He says he is much pleased with the present condition of business and the prospects ahead.

A good steady trade is being done by the Williams Patent Crusher and Pulverizer Company.

Gordon McNeil, president of the McNeil Pressed Brick Company, whose plant is located at Newburn, Ill., says the increase in the capacity of their plant was well timed, for they are having about all the business that they can attend to.

Mr. Anthony Ittner, of the Ittner Brick Company, says they are very busy; in fact, they have been turning business away, for they cannot manufacture brick enough to supply the demands that are made on them.

The estimated value of buildings in the course of erection and for which permits were issued during the month of April shows an increase of nearly $1,500,000 over the corresponding month last year.

In April, 1905, permits were issued for buildings whose estimated value was $2,983,178. This year permits were issued for buildings to cost $4,459,715.

The tremendous increase in the estimated value of buildings in the course of erection is probably due to the fact that permits were taken out last month for the erection of several "skyscrapers" in the downtown section of the city.

In April, 1905, the building commissioner issued permits for the erection of 284 brick buildings, to cost about $2,582,077, while in the month just closed 233 permits were issued for buildings to cost $4,228,325.

The report compared with last year shows a decrease in the erection of frame structures. In April, 1905, 353 permits were issued for buildings, the aggregate cost of which was $90,627, while in April, 1906, only 319 frame buildings were erected, at a cost of $79,224.

Last month 829 permits were issued for new buildings, frame and brick, and alterations in other buildings. In the previous year the report for April showed that five more permits were issued.

St. Louis is certainly beginning to take on a building boom. It is estimated that fully $15,000,000 will be expended during the remaining months of the year in the construction of office buildings, department stores and manufacturing establishments in the downtown business districts, not counting the many residences, apartment houses and other kinds of buildings contemplated in the residence portion of the city. The year will certainly be a record breaker for St. Louis.

Most of the buildings contemplated will be built by syndicates of public-spirited citizens. The following are some of the many that will be rushed to completion this year: A monster office building to cover the entire block extending from Pine to Chestnut streets on the east side of Fourth street and back to the Merchants' Exchange. It will be seventeen stories high and will cost about $1,000,000. Work has already commenced on the Liggett Building, a sixteen-story building on the corner of Eighth and Chestnut streets, to contain 375 rooms, and will cost $700,000. The Cellas Building, at the corner of Seventh and Market streets, is another big building on which work will soon be commenced. It will be fourteen stories high and will cost $650,000. Within the next month the building on the corner of Broadway and Olive streets will be torn down and a nineteen-story "skyscraper" will be built in its place. It will have stores on the first floor and there will be 1,000 offices on the other floors. The old building now at Eighth and Pine streets will be torn down shortly and a modern eighteen-story building will be put up. It will be a combination office and store building of 375 rooms. Plans have been approved for a fourteen-story building at Broadway and St. Charles streets, now occupied by retail stores. It will cost $850,000. The combination office and department store building to include the present Century Building to cover the entire block between Olive and Locust, Ninth and Tenth streets, is contemplated. It will include the Century Building, will be sixteen stories high, and will contain 1,200 rooms. Within the next sixty days the buildings now occupying the west half of the block will be torn down. Work has already been started on the new ten-story hotel at Eighteenth and Washington avenue. It will contain 450 rooms and will cost $750,000. Nearly two squares will be occupied by the Ely & Walker Dry Goods Company and the Brown Shoe Company. The former will be ten stories high and the latter eight. Another large shoe company will build a twelve-story structure at Fifteenth and Washington avenue. The N. O. Nelson Manufacturing Company is erecting a home building at Tenth and Chestnut streets at a cost of $500,000. It will be eight stories high, six of which are already put up. The Blackstone Building at the corner of Broadway and Chestnut streets has the superstructure up. It will be fourteen stories high. The Grand Leader Building at Sixth and Washington avenue, formerly the site of the Lindell Hotel, will be ready for occupancy in thirty days. It will cost $1,200,000. Several other buildings are contemplated, but, owing to the nonexpiration of the leases, work cannot be started at present.

William B. Ittner, commissioner of school buildings for the Board of Education, says that the Board of Education will make a record year for 1906 in the way of new school buildings. There will be more than eight new school buildings erected this year, the least expensive of which will cost more than $170,000. Some of these buildings will take the place of other buildings which are worn out, but most of them are to accommodate the increased attendance of the public schools.

The city has made one of the largest appropriations for this work ever made, but it is expected that the Board of Education will be in debt more than $900,000 at the end of the year for the many new buildings. Mr. Ittner also says that more than $100,000 will be expended on repairs to school buildings this summer, and his department is busy letting contracts and supervising the work which is already started.

At the monthly banquet of the Public Question Club held early in the month the question of "Greater St. Louis" was taken up. "The Citizen's Duty" was the topic discussed by W. B. Ittner. In the course of his remarks he entered a protest against "skyscrapers." He said that they were a menace to tho best interests of the greatest number of people and furthered the interests of only a few. He said that the "skyscraper" created congested districts, thus impairing the health of the people, and that they prevented the uniform increase of property values.

A Saint.

ESTHETIC POSSIBILITIES IN THE USE OF CLAY PRODUCTS IN ARCHITECTURE.

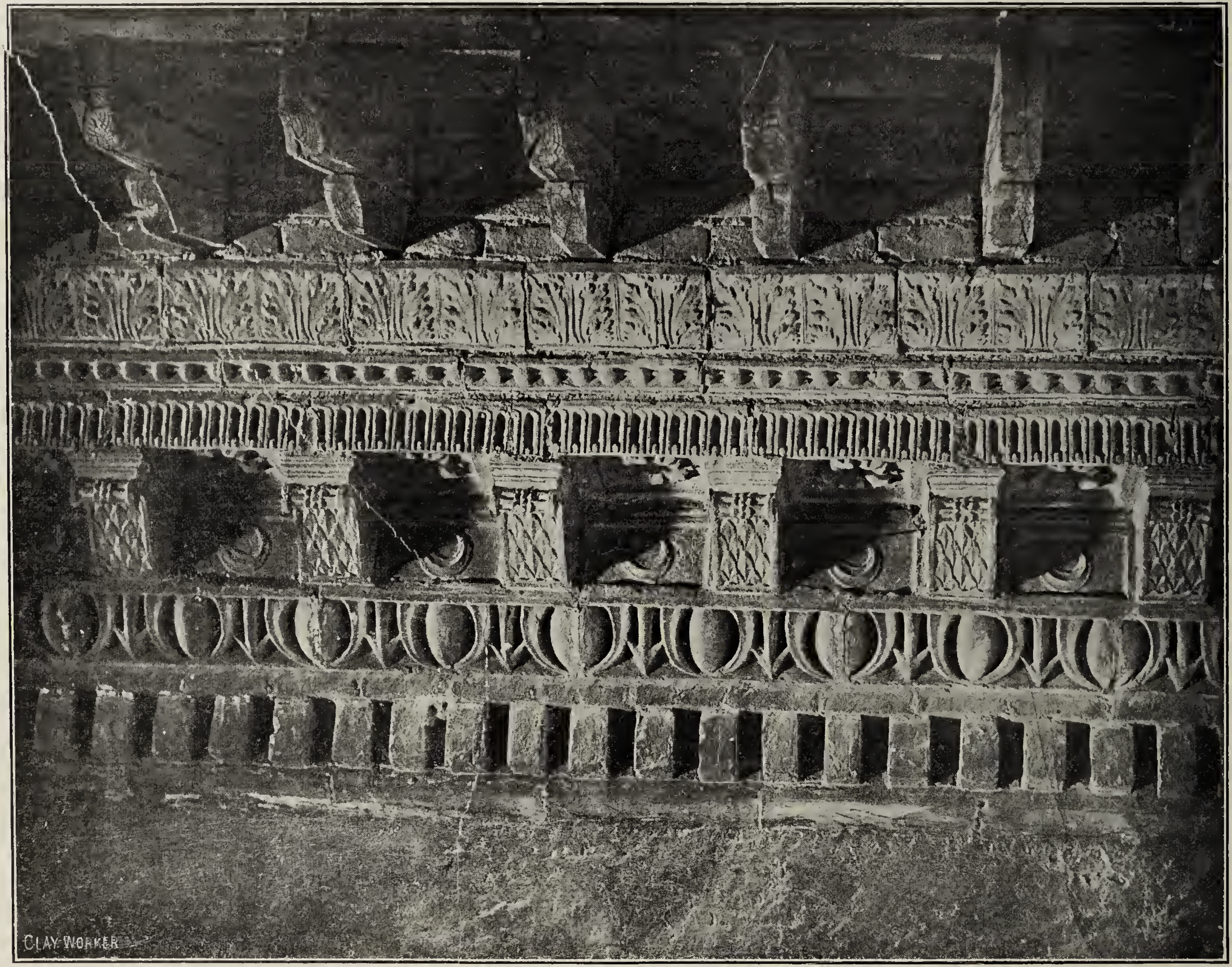
By James M. White, Professor of Architectural Engineering, University of Illinois.[*]

Mr. President and Members of the Clayworkers' Association:

I am very glad to present this subject, because it touches the relation between the manufacturer and the architect, and probably few of you realize how dependent the architect is on the manufacturer for his success or how valuable the support of the architects may be to you.

Some building materials find a market because of their durability, others because of their artistic merit, and in some instances fashion plays an important part. Cost alone is becoming less frequently the controlling element, and the salesman must be prepared to exploit the strength and durability of his material and to show certificates from testing laboratories in proof of his statements; he must be able to discuss its esthetic possibilities, for the results often depend more upon a proper combination with other materials than upon what can be seen in the sample itself. There never can be any absolute criterion by which to judge the artistic merit of a brick or a tile, but there is a way to employ almost anything so as to get artistic results, and it will pay every manufacturer to know how such results are to be obtained with his product.

The editor of *The Brickbuilder* says editorially in January, 1897, that "it is a melancholy and somewhat humiliating fact that under existing conditions the quality of brickwork is, all things considered, probably worse in America than in any other civilized country, while the quality of bricks is often better than elsewhere." With the introduction of the fine grades of brick we have developed a love of fine joints which are so thin as to be of no use constructively, which rob the work of all character and gives it a hard, dry, sleek appearance which can appeal to no artistic instinct. Until quite recently the ideal of an exterior brick wall was one with even and hardly visible jointing and with a uniformity of color, which produced a surface absolutely devoid of character or interest and without the charm of color, which comes naturally and inevitably where bricks are used without culling and are laid with joints sufficiently wide to tell in the color scheme. Brickwork to invite attention must be unconventional in treatment, and of late our architects have been learning the beauty of color variety in brick and the value of the jointing as an element in the color and texture of the wall, and these walls of monotonous sameness have become less common. The first departure from the ordinary red was a gray buff, which was put on the market about 1863 and used to easily bring $60 per



Detail of Brick Cornice of the Pallini Castle, Sienna, Italy.

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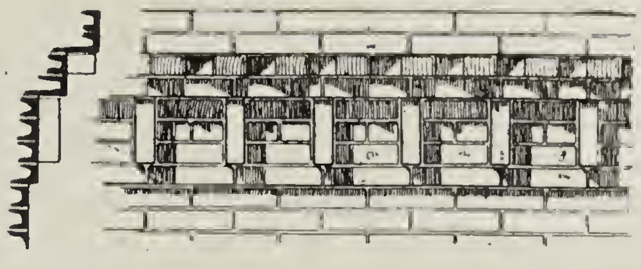
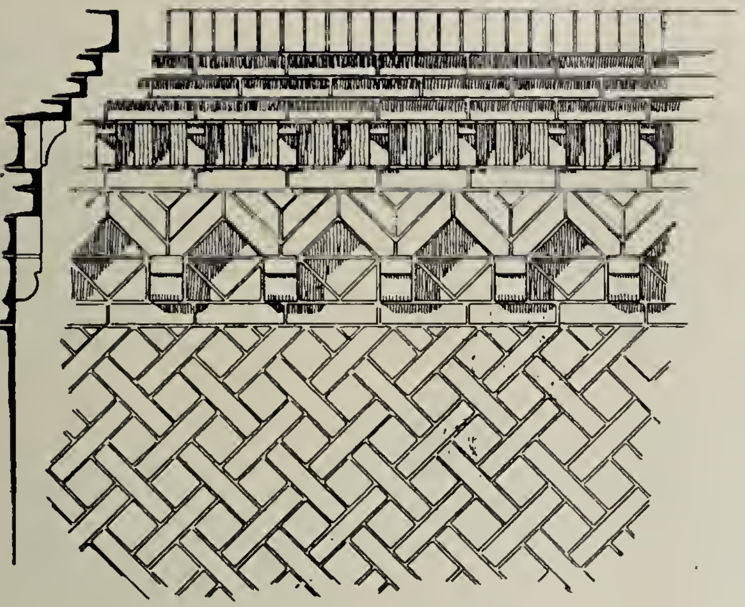
[*] Substance of an illustrated lecture delivered before the Illinois Clay workers' Association, Champaign, Ill., January 25, 1906.

·DETAILS·OF·ITALIAN·BRICKWORK·
·MEASURED·AND·DRAWN·BY·WILL·S·ALDRICH·
·CORNICES·

(Reprint from Brickbuilder)

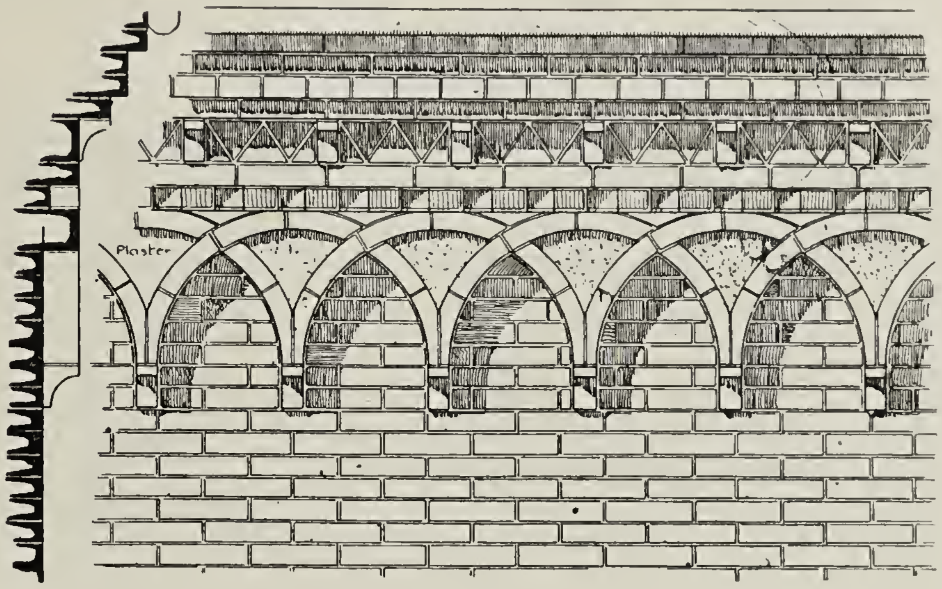


BOLOGNA



WALL OF BRICK WITH STONE SQUARES

SAN STEPHANO BOLOGNA



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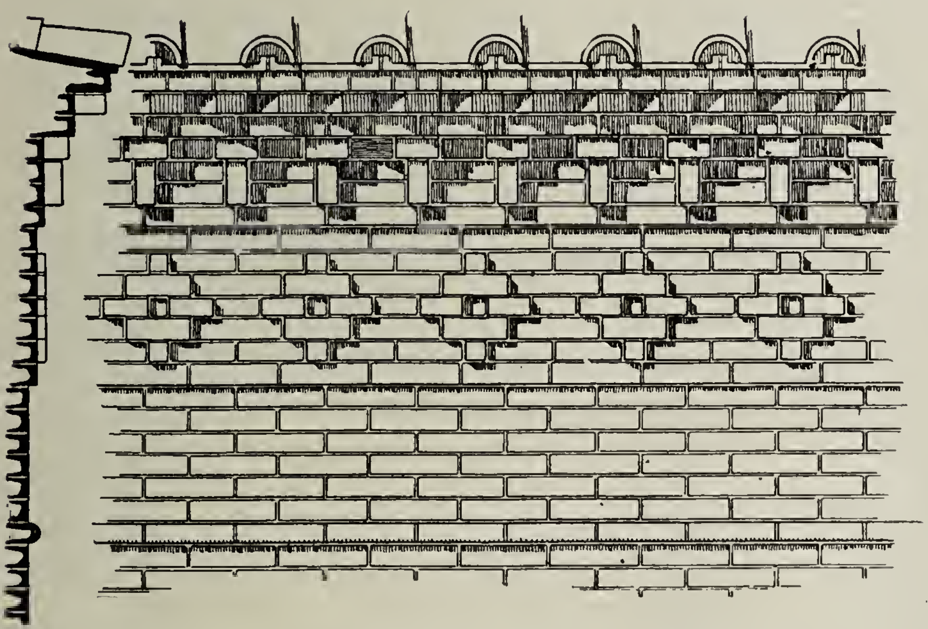
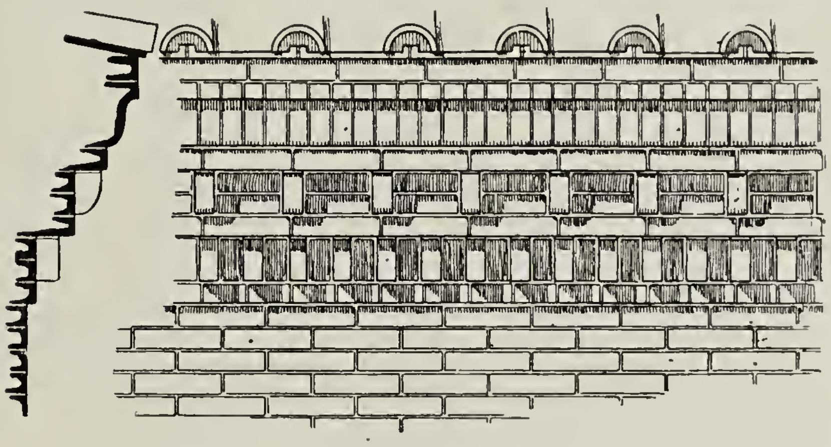
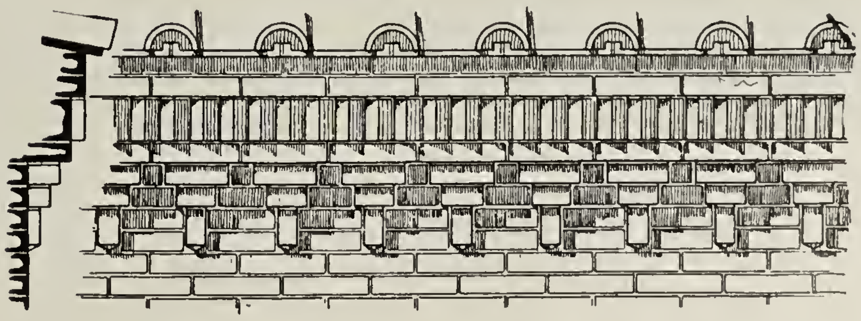


WALL CORNICE GARDEN OF S CATERINA BOLOGNA·



S CLEMENTE BOLOGNA·



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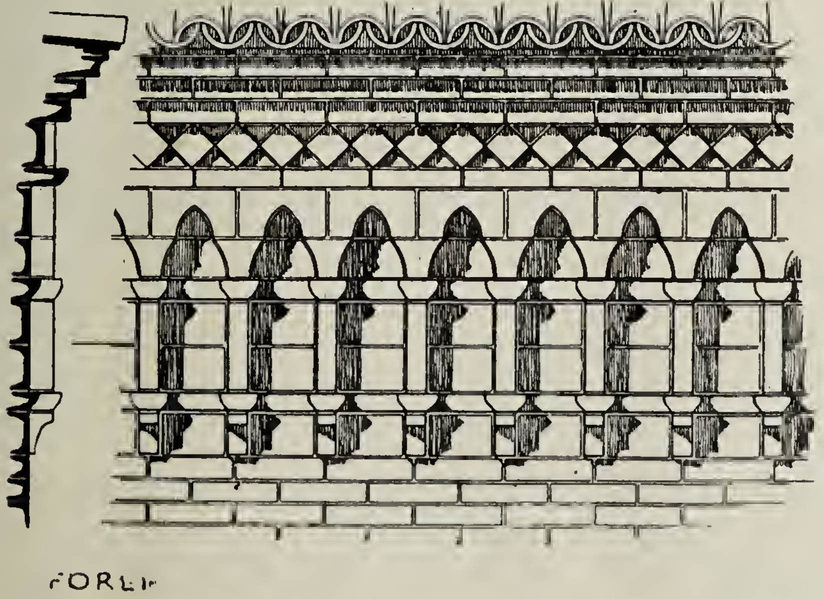

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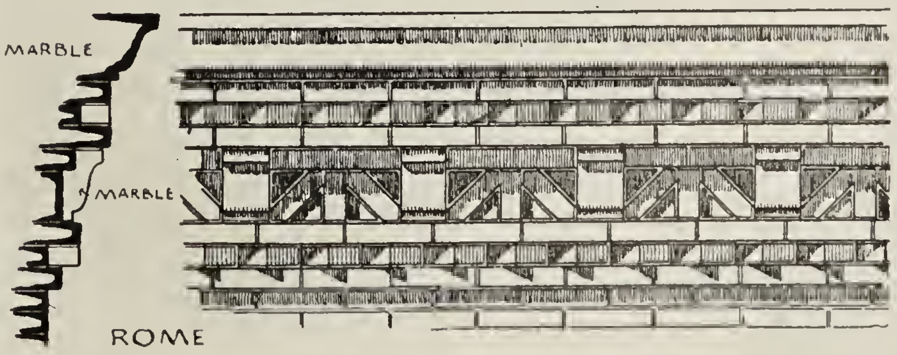


ROME

thousand. At the present time we can get white, buff, red, gray, brown, old gold, mottled, and all the intermediate shades of brick, but with all this variety they are often laid without culling, as they ought always to be.

The greater effectiveness and interest given to the appearance of a brick wall surface by the true English and Flemish bonds has also come to be appreciated, and these are more and more used in place of the insipid stretcher work which was invariable twenty years ago. Owing, however, to the fact that common bricks in this country are rarely made as they ought to be, so that two headers with the intermediate joint will be just equal to a stretcher, it is difficult and expensive to make use of these bonds. The width of the brick in relation to its length is usually too short, and the result is that the strongest of these two bonds, the true English bond with alternate courses of headers and stretchers, can rarely be made use of without cutting the brick to avoid the vertical joints coming over each other to the detriment of strength as well as appearance. For this reason the Flemish bond is more often employed; but even in this bond the headers can be brought over each other only with considerable pains. Some communities have tried to remedy the defect by legislation, and the following bill, which was submitted to the legislature of Massachusetts, indicates a size which would give satisfactory results:

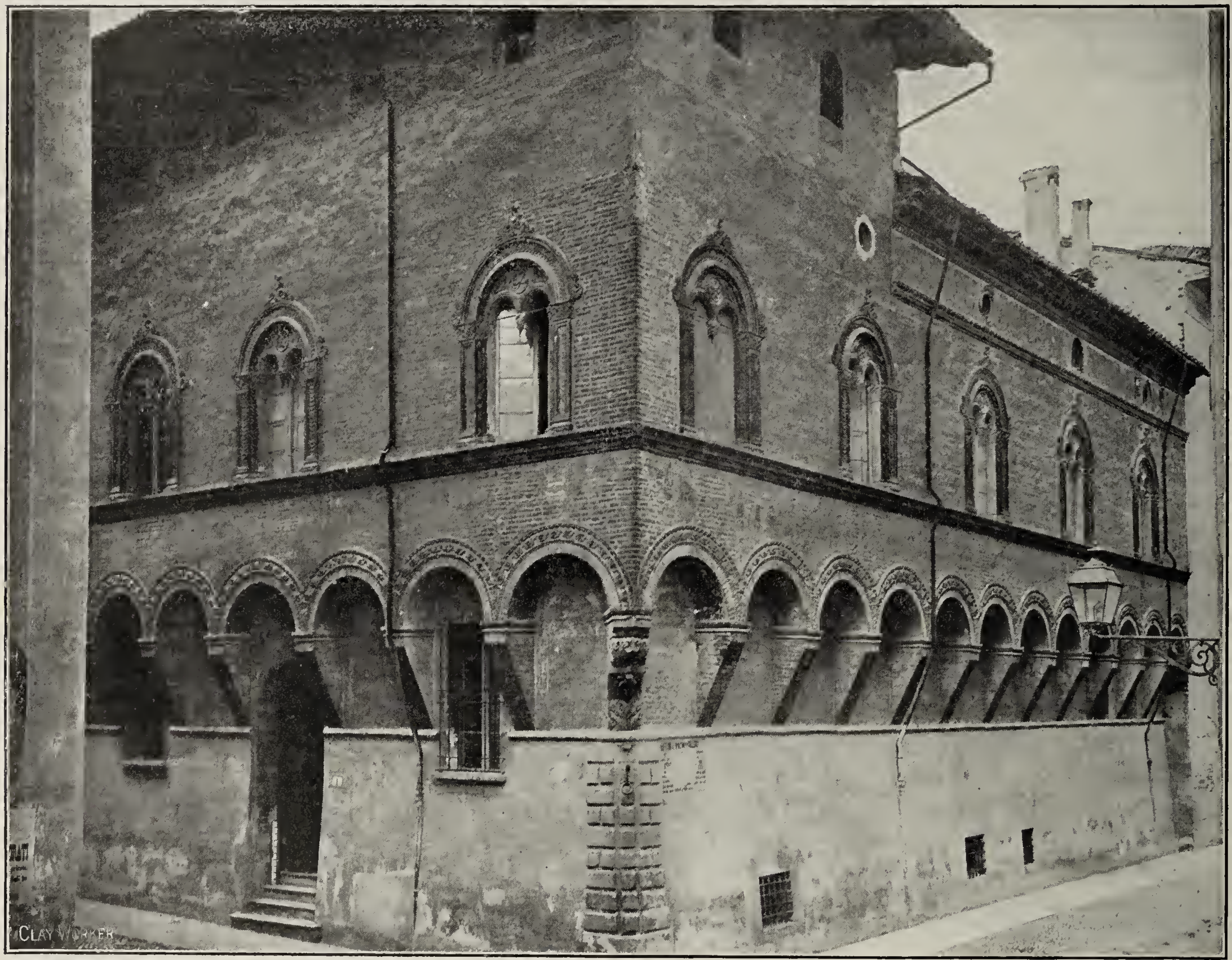
"Section 1. From the first day of July of the year nineteen hundred and three, all bricks manufactured or sold in this commonwealth shall be known as standards or seconds.

"Section 2. The size of standard face bricks shall be eight and three-eighths by four and one-eighth by two and one-fourth inches, and the size of standard common bricks shall be eight and one-fourth by four by two and one-fourth inches.

"Section 3. All bricks not of standard size shall be seconds."

From some recently published articles on brickwork I have abstracted the following descriptions to show by what combinations some architects have striven to avoid monotonous uniformity without having to await the weathering effect of years:

"Red brick laid without sorting for color and with deep concave joints.



An Instance Showing How Mediæval Traditions May Affect Architectural Design. This Arched Motive Was Used in Order to Permit Missiles to be Thrown Down from the Second Story Through Openings in the Soffits of the Arches.

"A speckled red brick laid on its face in black mortar.

"Mottled gray brick in white mortar with red shingle tile roof.

"Cream-colored brickwork in white mortar with trimmings of glazed white terra cotta.

"Roman bricks, almost orange tan in mass, but full of variety in shading and texture, with a shingle tile roof of a dull salmon pink.

"Bands of light pinkish-red bricks and ivory-toned terra cotta in gray white mortar.

"Pinkish sand mold brick with grayish headers laid in white mortar, "Red sand mould brick with black headers laid in black mortar.

"Red sand mould brick laid in Flemish bond with about one-third of the headers vitrified and of soft gray color such as are found in wood-burnt kilns."

As a single instance of modern English work I cite Westminster Cathedral, which is one of the remarkable recent buildings in London, and as it is a very artistic structure built to stand for centuries, it is of interest to note the materials selected: "For the exterior Bracknell red facing bricks two inches thick were used, with wire-cut bricks for the piers, and hard blue bricks for the outside facing of the underground vaults and sacristy and for the damp-courses, set in nearly neat cement. English bond was generally adopted, except for the outer facing, which was bonded to the backing with one course of binders to four of stretchers, without the use of quarter bats. Inside the building stock bricks were employed. The mortar was composed of Portland cement and clean, sharp Thames sand, mixed in the proportion of one to three. The courses were well rubbed in and flushed up as work proceeded, with a good substantial mortar joint throughout. The blue bricks will sustain a pressure of seven hundred tons per square foot, and are impervious to moisture."

While we are advancing rapidly in our appreciation of the possibilities of brickwork the great opportunities for the artistic use of tile are scarcely appreciated even by the average architect, and others are not bold enough to follow their inclination to employ them for fear that the result will be so unusual and striking as to cause comment. This is much to be regretted, since with tiles, whether upon the roof proper or upon the sides of the building, very many rational and natural artistic effects are possible. There are three general methods by which such artistic results may be obtained: first, by the color or combination of colors; second, by the shape of the tile; and, third, by the combination of tiles of different shapes and colors into groups or patterns. As a matter of fact, none of these three methods are new, but have been employed by architects of all countries for many centuries, and are still full of possibilities.

The first consideration is that of color, and all the other artistic possibilities of tile are of secondary importance. The flat, dead, absolutely even tone that one frequently sees throughout an entire building, indicating that great care has been taken to select brick, terra cotta trimmings and roof tile of the same identical color, is a lasting monument to a lost opportunity. The old tile roofs of Europe, generally so beautiful and harmonious in color as to have often called forth praise, are types to be well considered. It is practically impossible to find one of them of even shade throughout, and though the variations upon the same roof are extreme, the result is almost invariably artistic. The color possibilities of tile are almost limitless and, therefore, nothing need be crude or harsh. All the shades of brick are feasible and when in addition the results of glazing are included with all its attendant hues and special effects, the combinations become innumerable.

Colored tiles which give flowing lines on a roof have greater possibilities than any other roofing material, but a certain amount of irregularity is an added element of charm, and I wish we had mechanics with enough of the artistic sense so that they could be permitted to vary a little from the chalk line and the square. A roof that is absolutely uniform in line and color is monotonous, even though the light and shade effect on each tile is all that could be desired.

No hard and fast rule can be laid down for color combinations, and the extraordinary range and fine gradations of color that have been produced of late years seem to have added an element of danger to an already doubtful situation.

In selecting colors architects sometimes mislead themselves by placing small tablets of brick, terra cotta and tile side by side on an office table. In this they are liable to forget that any of these colors when seen in the mass at a distance under other conditions of light may produce an effect that will prove quite disappointing. They are likewise misled at times by specially prepared "samples" or such as have not been taken at random from a purely commercial output.

Perhaps the safest—certainly the least expensive—test will be found in a critical inspection of current work on which others may have experimented with more or less success.

Whether terra cotta should be made to match the brick used in connection with it, or to stand out in contrast with its setting, often becomes a subject of debate. The question is one that cannot be settled without reference to the style and character of the building, its situation and surroundings. These are the governing factors on which an intelligent decision must be based. The same esthetic considerations should be applied to the use of terra cotta as to stone, but, unfortunately, terra cotta is still suffering from the stigma of being a cheap material and is not given the same chance that would be accorded to stone.

The good artist in brick values properly the use of molded brick and terra cotta and uses them whenever he can do so safely and artistically. The bad artist seems to rejoice in the endless profusion of ornament with which the cheap reproduction of molded forms supplies him.

THE GREAT FIRES OF HISTORY.

In their chronological order, the great conflagrations of history are recorded as follows:

1212—London destroyed by fire and thousands burned.

1666—London again destroyed, with similar loss of life.

1729—Conflagration in Constantinople burned 7,000 persons.

1825—Forest fires in New Brunswick killed 160 persons.

1838—Scores burned at Charleston, S. C.

1842—Fire burned 100 persons at Hamburg, Germany.

1845—Forty-five killed by fire in business part of New York.

1845—Fire destroyed seventy in Quebec.

1850—Thirty lives lost in Philadelphia.

1851—Twenty-five hundred buildings burned at San Francisco, with scores of people killed.

1862—Troy, N. Y., destroyed, with large loss of life.

1863—Two thousand persons perished by fire at Santiago, Chili.

1866—Portland, Me., partly destroyed, with scores burned.

1871—One-fourth of Chicago burned, $168,000,000 worth of property destroyed and hundreds of lives lost.

1871—Forest fires in Wisconsin and Michigan killed 1,000.

1872—Sixty-five acres of Boston buildings, including business portion of city, burned; loss, $75,000,000.

1881—Ring Theater in Vienna burned and 875 lives were lost.

1881—Lehman's Theater, St. Petersburg, burned, with 600 to 700 lives lost.

1882—Newhall House fire in Milwaukee; 140 killed.

1892—Six hundred buildings burned and 15,000 persons made homeless at St. John's, N. F.; loss, $20,000,000.

1897—Paris (France) charity bazaar, in a temporary building, burned; thirteen killed.

1900—Windsor Hotel fire in New York burned eighty persons.

1900—Fire at Hoboken, N. J., killed 300.

1902—Twenty blocks of Paterson, N. J., burned; loss, $10,000,000.

1903—Six hundred and fifty-three lives lost in the Iroquois Theater fire, Chicago.

1904—Eighty blocks burned in Baltimore; loss, $50,000,000.

Numerous cities in China have been destroyed by fire and thousands of lives lost from time to time, but statistics of the disasters, as a rule, have not been kept.

PHILADELPHIA TO HAVE A TRADE SCHOOL.

Bricklaying, Plastering, Plumbing, Carpentry and Painting to be Taught in a Public School of That City.

THE BOARD OF PUBLIC EDUCATION of Philadelphia, soon after the National Brick Manufacturers' Association Convention was held in that city last winter, appointed a special committee, of which Murrell Dobbins, an old-time member of the National Brick Manufacturers' Association, was made chairman, to consider the advisability of establishing as a branch of the public schools of that city a department for teaching the principal trades and mechanic arts. As a result, it has been determined to establish such a course supplementary to the regular city schools. This is a matter of such great importance to all industrial lines that we give in full the report of the committee, hoping that same may enable the educators and public-spirited men of other cities to provide similar schools where young men may learn the trades of their choice. It is a privilege that every American boy is entitled to, and the industrial interests of our country will be advanced by such work.

Report of the Special Committee of the Board of Education, Philadelphia, on Establishing a Mechanics Arts Training School.

(1) We find that the building at Twelfth and Locust streets will be vacated at the close of this school year, and further that this building can be readily adapted to the work of a technical school. Moreover, it is centrally located. The building has been recently thoroughly overhauled and is in good condition. With a moderate expense there can be provided six good class-rooms for academic work; and by enclosing and covering one of the yards and utilizing the basement there will be ample space for the eight trades which it is recommended shall be taught in connection with this school.

(2) After a careful estimate of the cost of alterations by the superintendent of buildings, and a consideration of the necessary equipment for the school, we report that the building can be put in readiness for use and equipped at a cost of $10,000, or less. We estimate that a day school for 250 pupils can be maintained from September, 1906, to January, 1907, at $7,500, or less, and that a night school for double this number of pupils can be maintained for the same period at $4,000, or less. This will make a total annual cost of a day and night school of about $25,000.

(3) We recommend that there be established, to begin in September, an evening school of trades, and also the first year of a day school course. The evening school should be for those who are employed during the daytime and should furnish the means of improving the equipment of artisans.

This is a form of institution that has already been established in some half a dozen American cities, and it has existed for some time abroad. After an investigation into the occupations of the community we recommend that instruction be given in the following trades: Carpentry and woodwork, painting and decorating, bricklaying and plastering, plumbing and steamfitting, forging and machine construction, sheet metal work and tinsmithing, electrical construction, printing and bookmaking.

The list above given makes provision for the principal artisan trades carried on in Philadelphia. The textile trades are largely represented in this city, but they are already provided for in the textile school, to which public funds are appropriated.

We recommend that the evening school be kept open for six nights a week for two sets of students, one set to come on Mondays, Wednesdays and Fridays, and the other on Tuesdays, Thursdays and Saturdays. Such an arrangement will double the use of the equipment and will render the institution of increased value to the community. We recommend that persons be admitted into this evening school after the completion of the grammar school work of the city, or if they are fifteen years of age and have the requisite capacity to profit by the instruction of the school.

For the day school we recommend a four-year plan of studies to which students may be admitted after the completion of the course in the city grammar schools, or if they are fifteen years of age and are able to follow the instruction of the school with profit. This day school should, we believe, have a large element of practical work with an infusion of academic subjects. The latter should, so far as possible, be related to the former.

Our proposed plan of organization, which is presented in detail in an accompanying table, provides for four years of English, including a study of grammar, etymology and composition. It is our thought that the composition should be practical, including instruction in letter-writing and the preparation of specifications. The English instruction should give as wide reading as possible in American, English and world literatures.

In history and related subjects we recommend first a history of industries which would introduce the students into the field of their special studies. This we would have followed by a more detailed history of the last one hundred years in which special emphasis should be placed on the social and economic phases of the subject. For the third year we have suggested economics, a study of the organization of industry, the relations of labor and capital, etc. This third year's work might well include the fundamentals of bookkeeping. For the fourth year we recommend a study of civics and commercial law, the latter as it is related to the particular interests of this school.

Our next group includes mathematics and science where we recommend elementary algebra and a review of arithmetic, geometry and mensuration, physics and the study of materials and general and industrial chemistry.

We suggest four years of drawing, including freehand, mechanical or constructive drawing, and architectural drawing. It is our thought that the drawing should be closely related to the work in the shops, the students being required first to draw their objects, after which they will go to the shop and construct them from their own drawings. It is our thought that the instruction in architectural drawing, the making of blue prints, etc., will be of special value to students of such a school as is proposed.

The larger proportion of time in this school is assigned to the shop work and trade instruction. During the first two years one-third of the hours are given to shop work in wood and metal, this work being similar to that now being given in the manual training high schools. The last two years are for specialization in any one of the following occupations: carpentry and woodwork, painting and decorating, bricklaying and plastering, plumbing and steamfitting, forging and machine construction, sheet metal work and tinsmithing, electrical construction, printing and bookmaking.

Attention is called to the fact that this curriculum provides a good English education and relates this education to a special interest in life. By reference to the studies of the later years, it will be seen that much of the instruction is correlated with the trade which has been selected; for example, in the last year there is the preparation of tracings, the making of blue prints, the furnishing of specifications, the study of business law and industrial chemistry.

In presenting this report we wish to emphasize our belief that a day and an evening school as above recommended would be a legitimate and valuable addition to our system of public education. Such a school would better equip, make more intelligent and better satisfied with their work, a large and important class in Philadelphia. It is clearly the duty of our public education to serve the community by giving an education to the artisans that constitute so large and important a class of the community. In conclusion we wish to call attention to the fact that we have planned for the education of artisans rather than the mere teaching of a trade.

We respectfully request that this committee be discharged, and that the plan above suggested be referred to the Committee on Special Schools, with a favorable recommendation, and that the committee last named be requested to organize and inaugurate a mechanics arts school for day classes and an evening school of trades.

The following resolutions are, therefore, submitted:

Resolved, That the Committee on Special Schools be authorized to organize and inaugurate a mechanics arts school for day classes and an evening school for trades, both classes to begin with the opening of the school term in September next.

Resolved, That the Committee on Property be requested to set aside from Items 6 and 7 (Repairs and Furniture) of the annual appropriation to the board, a sufficient amount, not exceeding $10,000, to put in readiness and properly equip the school building, Twelfth and Locust streets, for the use of a mechanics arts school for day classes and an evening school of trades; and that said committee be further requested to take such steps as will have said building properly prepared, equipped and ready for occupancy in September next.

Resolved, That the Committee on Finance and Accounts be requested to set aside from Item 1 (Salaries of the Teachers and Janitors) of the annual appropriation of the board, an amount, not exceeding $11,500, for the salaries of instructors, etc., of the mechanics arts school for day classes and the evening school of trades; this amount to provide for the fall term of the present year.

MURRELL DOBBINS, Chairman.
WILLIAM ROWAN,
FRANKLIN S. EDMONDS.

MECHANICS ARTS TRAINING SCHOOL

Arabic Numerals Indicate Recitation Periods Each Week

First Year	Second Year	Third Year	Fourth Year
English Grammar, Etymology, Reading, and Composition. (5)	English Reading and Composition. (5)	English Reading and Commercial Correspondence. (3)	English Reading and Preparation of Specifications. (5)
History of Industries. (5)	History of Last 100 Years. (5)	Economics, the Organization of Industry and Bookkeeping. (5)	Civics and Commercial Law. (5)
Elementary Algebra and Arithmetic. (5)	Geometry and Mensuration. (5)	Physics and the Study of Materials. (5)	General and Industrial Chemistry. (5)
Freehand and Mechanical Drawing. (5)	Mechanical Drawing. (5)	Mechanical Drawing. (5)	Architectural Drawing, Blue Prints, etc. (5)
Shopwork in Wood. (5)	Shopwork in Wood. (5)	Specialization in any one of the following :— Carpentry and Woodwork, Bricklaying and Plastering, Plumbing and Steam Fitting, Painting and Decorating, Sheet Metal Work and Tinsmithing, Forging and Machine Construction, Electrical Construction, Printing and Bookmaking (12)	Trade Selected in the third year continued. (12)
Shopwork in Metals. (5)	Shopwork in Metals (5)		

Written for THE CLAY-WORKER.

NORTHERN OHIO BRICK AND BUILDING NOTES.

FOR THE YEAR thus far, Toledo hasn't experienced such building activity since the century began as it has during the past four months. In looking over the records at the office of the city building inspector it was found that 425 permits, with a total valuation of $1,505,010, were issued during the months of January, February, March and April. The winter being an open one, permitted of building operations continuing unabated throughout the season. April showed up with 161 permits, with a valuation of $388,535. Quite a number of big projects were started early in the year and these have been completed or will be completed within a short time.

With the appearance of May Day, Toledo brick yards were found to opssess a stock of only about 5,000,000 bricks left over from last season's run. All the local plants are now running. Outside of the plants of the Findlay Hydraulic Pressed Brick Company and the Ohio Brick Company, which have artificial dryers, thus permitting their running the entire year through, Spear & Clark were the first to have new brick ready for market this season.

"Brick trade will be fair for a couple of months at least," said W. O. Dakin, secretary and treasurer of the Toledo Brick Supply Company. "I doubt whether it will continue throughout the season, as building has been going on throughout the winter season. Big projects have been completed, or soon will be, and I don't know of but a few more, if any, yet to materialize. The coal strike is now a thing of the past; there are
rialize. The coal strike is now a thing of the past; there are
clear. There is no change in the prices of brick this spring, and I see no reason for any change. Of course if the coal strike had continued, it is quite likely that brick prices would have had to undergo an advance."

Toledo seems to be in a muddle over a new building ordinance. The new document contains 48,000 words, and is the work of City Building Inspector Lee and his assistants. The city building inspector, after framing the document, submitted it to a number of architects, contractors, the Toledo Builders'

Supply Company, and the Toledo Master Plumbers' Association, thus, with suggestions from these various sources, framing a very satisfactory ordinance for those mostly concerned. But the Council has balked, for some reasons not made known up to the present time. The city is in need of a new building ordinance, but, with the peculiar action of the City Council, it is now hard to tell when the city will have a new law.

The highest apartment building to be found in the city is being erected by Dr. J. W. Wright at the corner of Cherry and Sherman streets. The structure will be eight stories high and will be built of brick with stone trimmings. It will contain forty apartments and is expected to be completed by the first of October. The cost is placed at $80,000.

Among other important building permits issued recently by the city building inspector is one for the Milner Building Company, which is erecting a $50,000 brick structure of six stories, to be an addition to the big department store of W. L. Milner & Co. H. S. Knocks has taken out a permit for the erection of a commercial brick building of four stories to cost $40,000. Another permit was issued to Aaron Chesbrough for a brick and frame apartment house for eight families, to cost $35,000. And other permits were issued to W. F. Robison and A. M. Chesbrough for a commercial brick and steel building of five stories to cost $14,000; to C. E. Russell and Louise R. Hunter for a store and flat brick building of three stories to cost $11,500; to Martin Christy for a brick and wooden apartment building of two stories to cost $11,000; to O. W. Holmes for a brick, cement and frame flat building of three stories to cost $10,000.

The City Council has passed an $80,000 bond ordinance for general street improvements. Fully twenty paving jobs will be let for the season.

John B. Fox, in company with his wife, has returned from a winter's stay with their daughter in Kentucky.

The Collingwood Brick Company has set its new plant in operation. As mentioned before, the company only intended to build half of the real size of the new plant for operation this season, and next fall the other half of the plant will be erected.

H. C. Ellis and daughter have returned from Arizona, where they spent the winter. Mr. Ellis went West in quest for better health, but he is reported as not being very much improved.

Joseph Gates, aged 70 years, formerly in the brick business here, died a few weeks ago at his residence on Vermont avenue. He is survived by a widow, two sons and two daughters.

Bluffton, Ohio, has decided to pave two streets, which will cost in the neighborhood of $100,000.

The Davis-Wilson Company is the name of a new concern which has opened a brick plant on the East Side.

On account of reducing the pay of the engineer of the plant, about a score of employes of the plant of the Carey Lumber, Brick and Tile Company, at Carey, Ohio, struck a couple of weeks ago.

T. O. D.

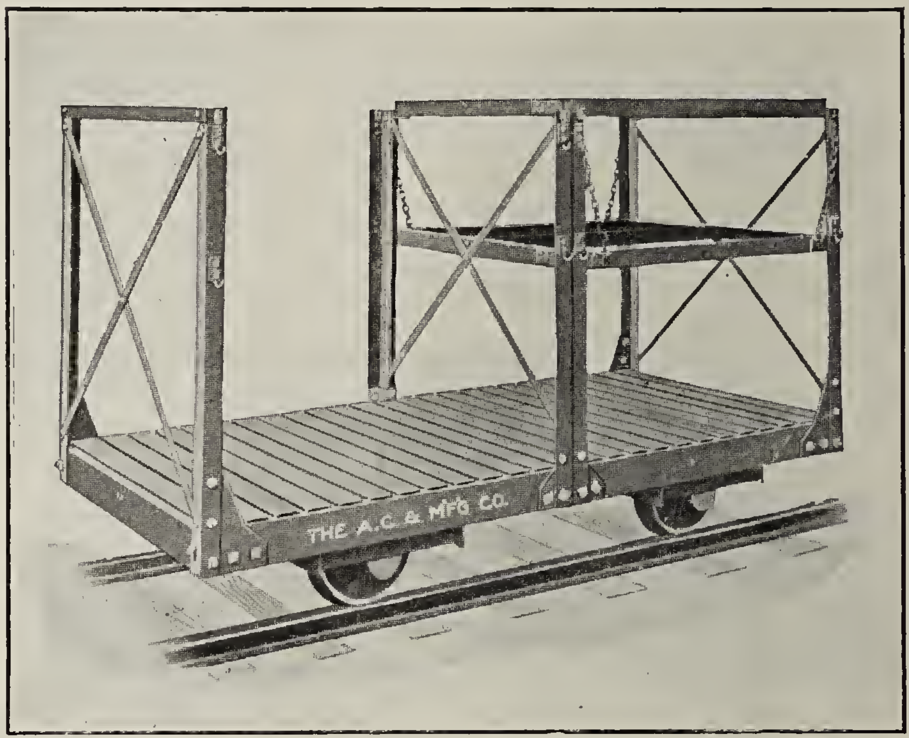
ENGINEER KILLED BY A FLY-WHEEL.

Abraham Fleming, the chief engineer at the Hydraulic Pressed Brick Company's plant, St. Louis, Mo., was instantly killed by being caught in the fly-wheel of the engine. After being whirled around, Mr. Fleming was hurled twenty feet. His fellow-workmen rushed to him and physicians were summoned, but he lived only three minutes.

Mr. Fleming had been in the employ of the company as engineer for twenty years. The cause of the accident is not exactly established. Other workmen at the place say that a belt broke and threw Fleming against the wheel, but officials of the company say that he risked his life by going into such a dangerous place. Mr. Fleming is survived by his wife, Mrs. Nellie Fleming, and a daughter. He was fifty-three years of age.

INTERCHANGEABLE TRIPLE-DECK CAR.

THERE IS NOT a fireproofing and conduit manufacturer in the country who is not familiar with the name Henry L. Hinton. His treatise and tables on fireproofing in this line are the most used books in the world. 'About a year ago Mr. Hinton in designing his mammoth fireproofing factory, looked for a suitable car in which to dry his clay product. After some months of search he concluded that the cars in use were not designed along the lines of economical handling. The car herewith illustrated was adopted after considerable experimenting. His first thought was durability, then easy access to loading and unloading and quick regulating of changing height to different lengths and shapes. By studying the illustrations these points will readily be appreciated. The main frame is composed of channels. At the corners, the uprights are riveted, forming a connection and brace, also plates are riveted to reinforce the uprights and corners. The deck is composed of channels having a center support running from end to end, the boxes being fastened to cross angles, giving a greater bearing value to the side frames, the wheels being pressed onto turned axles which run in improved roller bearings. To the uprights on the sides are riveted forged lugs at different distances to accommodate chains from which the intermediate decks hang, the top decks having lugs on corners which sets into grooves in the angle uprights. In loading the car these decks are turned up out of the way, giving free use of space. Owing to this point the cars are loaded quickly and the ware is not injured in handling. After the lower deck is loaded the intermediate deck is let down, and so on until loading is completed. A novel deck is introduced on these cars, the frame work is made of an inverted channel, the slats setting in the grooves, making a durable and permanent deck in every way. Mr. Hinton finding these cars so much better adopted to his needs in the manufacturing of fireproofing, after a year's trial concluded to allow the cars to be manufactured for the trade. On account of their rigidity and superior construction they are the best on the market. It gives us pleasure to announce to our readers that the Atlas Car and Mfg. Co., of Cleveland, have secured the rights to sell and manufacture these cars, and dimensions and further data can be had by applying to them.



An Improved Interchangeable Triple-Deck Car.

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.

IN SPITE OF A THREATENED strike of structural ironworkers and teamsters, which promised for a time to tie up things in a serious way, and despite several other things that the pessimist—but he would not have to be a blue one—might find to growl about, Chicago is on the boom. A body can squeeze into the office of a contractor or a material dealer for only one purpose these days, and that—not to talk, but to "do," business, and "do it now." If he talks business, he has to talk it pretty hard and with every symptom that he is going to become a customer—otherwise "23."

Within twelve months downtown Chicago is going to present a vastly different appearance from what it did three years ago. The new type buildings that dotted the "loop" area here and there in 1904 and 1905 are fast becoming "mere incidents in the landscape," as their out-of-date neighbors are being wrecked and similar structures of modern type and built to wear are rising beside the pioneers.

The more new buildings go up the more will have to go up until the entire downtown district is rebuilt. The reason for this lies jointly in the nature of the soil—much of it made land—on which downtown Chicago is built and in the effect which the presence of adjacent caisson foundations have on the old floating type, and to some extent, it is said, on the pile foundation. In some instances the effect of the sinking of the "wells" for a caisson foundation has been felt by buildings of the old type nearly a block away. One structure, used as a fashionable restaurant, has been thrown seven inches out of plumb. In almost any old building cracking walls and breaking plaster show "what is doing." The City Hall, over the actual condition of which there has been as much controversy as over a patient with a complication of diseases and a plethora of surgical and medical assistance, is one of the most aggravated instances.

The blame is generally laid upon the sudden drainage put upon moist soil by the sinking of the wells for the concrete bases. The moisture oozing out causes the soil upon which the "floater" rests to fall together, with the result that the foundations perforce themselves give place and the walls follow suit. This development in the building history of Chicago, instead of deterring building, however, seems inevitably to point to a more rapid change from the old Chicago to the new. Among the new buildings already talked of in addition to the many actually under way either as to definite plans or actual construction, are two hotels, one to take the place of the Sherman House, Clark and Randolph streets, and the other to take the place of the old building at the northwest corner of Madison and La Salle streets. The latter is planned as a combination building, and negotiations are on foot for the Chicago Commercial Association—that galaxy of Chicago "Boosters" with a capital "B" who invented the phrase "Great Central Market," and have traveled all over the continent preaching it as their gospel ever since—to have two or three floors for their headquarters.

As if there wasn't zest enough in life anyhow, the common brick people have started a little "joy fest" on their own hook. They declared an open season for prices and began shooting at them in a way that brought them down several zones. Common brick which were selling for $7.50 all winter, with an occasional demand for $8 if a "sucker" appeared to be "coming up the pike," are now down to $5. Report has had them as low as $4.50 on big jobs to contractors who were "right" and could make a bluff, or show a quotation "just for instance," but it is impossible to find where they have gone for less than $5, and, as may be observed, this is something of a sacrifice.

According to current gossip, the National Brick Company started it all by cutting the price to $6. Orders came in like herring over the rail of a "Banks smack" in gray weather. The Illinois Brick Company, the so-called "trust," for a time kept prices up and sold brick. Times are so good and the demand so keen that a good man could pretty near sell mudpies for building material if he went about it right. The National, however, which, although starting in famously, is not yet in as good shape as to capacity as it will be shortly, is reported to have found it impossible to keep up with the inundation of orders.

Then the Illinois Brick Company came to bat in the "slicing" game and made it "a good one." They only cut the price to $5. That was all a lot of the National's $6 customers wanted. Those who could claim delay as an excuse for breaking their $6 contract shouted "delay" and "awful." "Awful" in a way that was heart-breaking, especially for the National people, for whom things had looked even more exquisitely rosy now than a few weeks before. Those who could not complain on the score of delay began almost as vehemently to express "bitter disappointment" with the brick they got. It was costing them $6, you know, and they were dying to join the stampede for $5 brick "around the corner." Nearly everybody is selling for $5 now, and the town is wondering "what next" in the merry war.

One of the "war stories" going the rounds runs thus: A certain contractor, who shall be nameless, had a big school job on his hands in a section of the city not here to be designated. He had contracted for his common builders at $6 per thousand. About the time he got his job half done—Bingo!—the price went down to $5. Mr. Contractor went around adorned chiefly in sack cloth, ashes and sad looks. Also he became critical and skeptical; also he became observant. With a start he awoke to the fact that his job had not been watched closely; that the brick were not all that they should be and should have been. This made him sadder and he bore a close resemblance to an old-style deacon passing the plate. To be sure he was right, he got inspectors to come out and look at that horrid old $6 brick! They agreed with him; it was very bad indeed. He went to the dealer.

"I don't want you to think," said he, "that I have any kick coming because the price has gone down. I'm not that kind. Oh, no. I'm not a welcher. I'm an honest man. Now I want you to understand that I'm not kicking for that reason at all. But these brick here—a deprecating shrug of the shoulders—they won't do at all. You will have to take 'em away; they're no good.

"It's too bad, too—right in the middle of the job. But I'll have to go somewhere else, I guess. The school people say they won't do, and you know what that means to me. I'm an honest man and nobody likes to stick to the letter of his contract better and closer than I do, but I cannot stand for this deal. Why, 35 per cent. of those brick are rotten!"

The dealer, being blessed with a close approach to human intelligence, saw the situation at a glance and, like a prudent man, bowed to the inevitable.

"Well," said he, "of course we'll have to make it right with you on those bad brick. We'll have to let you have the rest of the order at $5, I guess, to kind of even things up, and, of course, we'll watch the rest of them to see that they run right. How does that strike you?"

"Well, I suppose under those circumstances I'd have a pretty hard time getting away from my contract, wouldn't I? Well, as I said, I'm first of all an honest man, and if you'll do that, why, my conscience wouldn't let me do anything but keep my part of the bargain, though I have been awfully disappointed in those brick."

Bonner, Marshall & Co. are having a good run with their new Oriental brick. For the New Southern Hotel, Thirteenth street and Michigan avenue, 150,000 have been ordered, and C. H. Hull plans to use 50,000 in an apartment house in Kenwood.

SCRIP.

Written for THE CLAY-WORKER.

CLEVELAND, THE CITY OF BRICK STREETS.

PROBABLY THERE is no city in the United States with as large a percentage of brick streets as Cleveland. Of a total of 280 miles of paved streets, 165 miles are of brick. Of the balance a large proportion are of simple stone construction or macadam, while a small percentage are of asphalt.

During last year there were laid 27 miles of pavements in Cleveland, 22 miles being of brick, several miles of macadam and the balance of asphalt. During the current year the Board of Public Service contemplates the laying of pavements on portions of upwards of 100 streets. Fully ninety per cent. will be of brick, and the balance of macadam.

Not only are the business streets, where heavy and continual traffic prevail, paved with brick, but also the residential thoroughfares and avenues. Little fault is found on account of the increased noise, for the residents believe that what is a disadvantage in that respect, brick pavements are a blessing in another way, for the streets can be kept clean and free of the fine granulating dust which sifts into the homes and ruins everything it rests upon.

Cleveland's method of laying its brick streets is not essentially different to that in vogue in other cities. The only difference in the material is that a five-inch brick is used, being somewhat larger than the regulation. A three year guarantee is demanded of each contractor. The city engineers declare that if a pavement is of poor quality or laid wrong, the defect will show itself in that time and can be remedied under the guarantee.

Something like 25,000,000 paving brick are used in Cleveland each season, so that it can be seen to what extent the city believes in its value as a paving material. This brick is all brought from manufactories in, or very near, Cleveland.

The water flushing system is used to keep the brick streets clean, and this fact, perhaps, is responsible for the favor in which brick as a paving material stands to-day. Each night, or several times a week, the flushers go over the pavements, cleaning them as thoroughly of dust as the marble floor of an office building is cleansed between nightfall and dawn by a band of scrubwomen. As a consequence that fine dust which stings the eyes and irritates the throat is absent from Cleveland streets, though it is not otherwise an overclean city, due to the smoke of the giant industries located within its boundaries.

All pavements laid under the present specifications call for the use of a concrete base and a cement-asphalt filler. Stone curbing is used, though cement curbs are being experimented with.

Brick streets in Cleveland are not confined to the down-town section; they are all over the city. Care has been taken particularly to have all thoroughfares acting as arteries to the city paved to the limits. Here the county commission has taken up the work and extended the brick roads many miles out into the open country. Buckeye.

Laying Concrete Base for a Brick Pavement, Cleveland, Ohio.

Every man should think for himself
But not of himself alone,
For others have some right to pelf
As well as wrongs to atone.

For cheap machinery the reader is referred to our "For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted, "For Sale," etc., columns a means of satisfying their needs.

Written for The Clay-Worker.

CLEVELAND BRICK NEWS.

REPORTS FROM EVERY branch of the brick business in Cleveland and the section of Ohio immediately surrounding it, indicate that the most prosperous year in the history of the trade seems assured. In addition to the numerous plants running to full capacity several others are projected. During the winter season just closed a number of the plants increased their capacity and made other improvements of a necessary nature.

The common brick outlook is particularly bright. The fourteen or fifteen common brick plants in and about Cleveland have, for the most part, been operating all winter. Building has also been going on for most of the winter months, owing to the mild weather. As a consequence when the season opened in earnest a few weeks ago there was less than 10,000,000 common brick on hand. Plants are operating full blast and turning out every available brick for which there is a ready sale. Common brick sells at $6.50, there having been no change in price for three years.

Laying Vitrified Brick on a Street in Cleveland—Residential as Well as Business Streets are so Paved.

W. H. Hunt, head of the big Cleveland firm turning out pressed brick, reports that his immense plant near this city is doing a rushing business and that the firm has all the orders it can handle. The sewer brick business has been at a standstill for several months, but it is expected that this month will see it pick up, as certain legal obstacles to appropriations of city funds for sewers have been removed.

In the paving brick line the outlook is also good. Three Ohio firms have between them contracted for the total supply of Detroit's brick this year. Detroit will use from 5,000,000 to 8,000,000 paving brick this year. The Malvern Brick Company, represented by Charles E. Deckman, Cleveland, and the Collinwood Shale and Brick Company, represented by S. M. Duty, will between them supply 5,000,000 brick. The first shipments started May 1. The Robinson Clay Product Company, of Akron, Ohio, is the other firm which is on the Detroit supply.

The city of Cleveland is expected to use 6,000,000 paving brick this year. The work is let out to contractors, who buy the brick themselves. About ten Cleveland firms will benefit by this arrangement. Already a large number of streets are under way, and a banner year is expected.

Brick prices in Cleveland and vicinity have strengthened a little during the past month in consequence of the threatened coal strike. This is so particularly with the paving brick plants which are not situated in localities piped for natural gas. The common brick plants are not worrying over the coal situation, however, for nearly all of them are equipped with natural gas. During the past month two more companies put the gas service in. They were the Standard Brick Company and the Cullen Brothers Brick Company. Paving brick manufacturers, however, are a little nervous over the coal proposition and are watching the efforts to settle the matter with considerable interest.

Deckman & Duty, who handle the output of the Wadsworth Brick and Tile Company, of Wadsworth, Ohio, having a capacity of 30,000 faced brick per day, report a good demand for that line of building material.

Forty-eight acres of land near Bedford, just outside of Cleveland, and owned by Paul Schneider, has been leased to Gustav A. Wagner for a period of fifty years. A brick plant is to be erected by Wagner with a capacity of 100,000 building brick per day. The terms of the lease stipulate that the plant must be completed and in operation within five months. Tests of the clay which have been made show that there is thirty-six feet of yellow clay, below which there is forty feet of shale. After the clay is stripped off, shale brick, sewer pipe and tile will be manufactured. The plant will cost $50,000. Work has already begun on preparing the land for the plant, which will be ordered this month.

The Barkwill Brick Company has placed a new dryer and a new traveler in its plant at a cost of several thousand dollars.

The National Fire Brick Company, of Strasburg, Ohio, with head offices in Cleveland, has built a new 100-foot addition and installed four more kilns, increasing the capacity of the plant from 40,000 to 60,000 brick per day. Prospects for fire brick this year are good, as building is booming in Cleveland and the fire brick trade depends largely on that BUCKEYE.

LAND DRAINAGE

BY J. J. W. BILLINGSLEY

DRAINAGE THE CHIEF FACTOR IN SOIL IMPROVEMENT.

MUCH IS BEING said at Farmers' Institutes and other farmers' gatherings, about soil improvement and the best means to that end that soils in cultivation may be kept in a good fertile condition. It has been wisely said that, "It is greatly to the credit of any one if it can be said that his land is better for his having owned it," and it is so.. The land owner who so plans his soil management as to maintain the fertility, it is a credit to his brain power, but it can be said that his soil is better, richer, grows better crops, then, it is greatly to his credit.

At the base, however, of the best soil improvement. is the sufficient underdrainage of it, where it needs it, and most clay soils need tile drainage to bring out the best results. Much is being said about growing 100 bushels of corn to the acre and but few are doing it, though it is being done on tile drained land. The men who are talking to the people from corn trains are preaching the gospel of tile-drainage, for the reason that it is the chief corner-stone upon which to build for the best conditions of soil to do the work of growing maximum crops. Those experienced in corn growing know full well that a "wet spell" or a "dry spell" during the corn growing season may effect the crop so as to lessen the production one-third or one-half on land that has not been tile drained, but which needs this important improvement. If a good strong clay soil, not tile drained will grow 50 bushels of corn per acre when the season is favorable, and then after being tile-drained grows 80 bushels per acre for one season after another with good husbandlike cultivation, is it not clear that the owner can well afford to tile drain? In fact he cannot afford not to do it. The entire cost of the work would be more than paid in two years and the taxes besides.

But we are brought face to face with the fact that on good soil well underdrained it is possible to grow 100 bushels of corn per acre. Yes, more. It is probable, with a good selection of seed and a thorough preparation of the soil and careful planting and the right kind of cultivation, it is probable to have a yield of 100 bushels per acre, depending upon a mixture of brains in the business. However, there is no probability of getting such results from land that needs tile drainage and does not get it.

At the base of the undertaking to grow 100 bushels per acre, on clay soils, however fertile, is the one thing needful —sufficient under-drainage. Then the fertility in the soil and that which is applied can be made available, making it possible to grow maximum crops. After being tile-drained we may work with confidence in adding to the soil fertility by crop rotation and applying manures and fertilizers and decaying vegetable matter, but for the best work tile drainage comes first.

How Drain Tile Works.

Farmers generally understand, or think they do, how drain tile work—how the water gets into the tile,—but we presume that many of them are not aware of the fact that most of the water runs into the drain from the bottom of the joints rather than the top. All the water that enters in at the top of the joints of tile is the small amount of water falling directly over the joints of the pipes. Except it be that the tile are not large enough to carry the water away as rapidly as it reaches the tile, the line of complete saturation rising in the ground above the drain, the water enters at all points around the joint that is open enough to admit it. When the drain is large enough to carry the water, then that which falls at the sides of the drain percolates through the earth downward till it reaches the water line, the subsequent course being laterally toward the ditches and tile which are receiving and discharging water so long as there is a surplus of water to carry away. When the drains can carry the water away faster than it can flow in, they can never be filled and consequently the water must get in from the bottom or sides of the joints; so when it is desired to keep sand from entering the drains at the joints, it is no use to cover the top of the joints with sod or tar paper and leave the sides and bottom of the joints open.

Farm Drainage.

No one thing over which man has control has done so much for the agriculture of this country, particularly through the corn belt, in the past twenty-five years as has tile-drainage. The experience of thousands of farmers is being added to arguments showing that when this work is well done it is a good investment of money and labor,—an investment that will pay annually for generations a most satisfactory return.

It Pays.

The farmer who has a thoroughly tile-drained farm can grow a renumerative crop, let the season be wet or dry, for the following reasons: He can begin work as soon as the frost is out of the ground; there is plenty of time to put the ground into the best possible condition for planting. He can plant early, the seed germinate better, his crop gets an early, vigorous growth, the soil can be stirred to suit the condition of needs of the crop.

Successful Farming.

In order to farm successfully it is important to grow good crops every season. The effects of tile drainage on the soil is so beneficial that every needed condition is fully met, as follows:

The soil being freed from cooling effects of evaporation, absorbs the heat of the sun, promoting a rapid and healthy growth.

If the summer is wet the surplus water is carried off in the tile-drains. If a drouth occurs the deep soil retains sufficient moisture for the growing crop.

With tile drained land, the husbandman is in a large measure independent of the seasons, he may make his business calculations with as much certainty as the capitalist makes his based on gilt edged bills receivable, if not with greater certainty. A thoroughly tile-drained soil cultivated in a good husband-like manner does not fail to bring forth its fruit in season and the leaf does not wither, and whatsoever the owner doeth, it prospers.

The owners of wet lands are not so. They may reap and they may not. The season may be favorable and it may not. The clouds pour out water, the season is wet and crop conditions are bad, or the heavens may be brass, and the land parched; it is a season of distress, loss, discomfiture and failure. The corn is dried up; the season is blamed. It is not so with the wise husbandman whose land is well tiled and well tilled.

DRAINAGE IN NORTH DAKOTA.

A Mass Convention Held at Grand Forks—Extracts from the Address of J. J. Hill, President of the Great Northern R. R.

"How will you get better conditions?"

"You will get it by an intelligent system of drainage. It is just as necessary for you to have an abundance of water to nourish your soil. If you have too much you must get it off. It is heartrending at times to ride through the valley after the crops have grown above ground and the earth is covered with a beautiful grain and then have two or three days of heavy rain, and in a week after the whole thing has turned yellow. We feel for the man who has lost and we feel ourselves as if we might as well run through a sand desert. That is why I wanted to come out here and reason with you as to the best method. Allow me to say that the fall for drainage in the valley is nearly uniform for its entire length. The fall is between four and five feet to the mile. The Mississippi from St. Paul to Rock Island has a fall of five or six inches to the mile, and it drains an immense area. Your section lines run north and south and east and west. Heretofore you have largely followed the section lines, the same as in Minnesota, making roads and ditches at the same time. In some places that will be necessary and in other places it will not be necessary. The river falls to the north as you will readily see because the stream flows to the north; on the west it flows to the east, falling toward the river, so that real line of drainage is northeast in Dakota and northwest in Minnesota. But for you to inaugurate an intelligent system of drainage you must have a correct topographical map of every township and of every square mile in the valley where you expect to furnish any drainage. Ultimately most of these lands will be tile drained and you must make main drains to carry off the surface water carried by these tile drains. Now to do this you may take it up with the general government; you might get the general government interested but at this time it is interested in a great many things. Maybe you can persuade some of your representatives to get an appropriation for you but if you wait for that I am afraid that some of you will have to wait a long time. Some of you old gentlemen, like myself, who use white hair dye, may get to a place where they won't need irrigation. We hope we won't anyway. However, before you can do anything you must make a thorough and accurate examination of the surface of the earth, finding the direction in which the water runs. The water will always find the line of the least resistance and you must find where that line is and then the rest of the work is comparatively easy to put your hand in you pocket and pay the money out.

"Some men have put their hand in their pocket and pulled out their money and never got anything for it. What little drainage has been done has not been done in exact measurement under a series of scientific measurements. That is practically useless. Some men might get rid of it and turn it over on his neighbor's land, and then there will be lawsuits, and neighborly quarrels. You must have a plan provided which takes it right into the river. You all know that your trouble with the lands here is that there is no way for the water to escape, and it must stand on the land until it evaporates, and then it is hard to put the seed in. First you have to wait till you can get it on the land to put your crop in and then it may be lost before harvest. It is fair to say that it cost $4 per acre to put your crop of wheat in. If you can get thirty bushels to the acre at $6.50, you are better off than if you can get 12 or 13 bushels to the acre for $6.50 per acre. This is what I would like to see you do. Whenever a man starts out to think that he is going to get something for nothing he will find himself disappointed. He will get always what he isn't looking for, and we are not seeking it on that line and I certainly advise you not to.

"I should judge that you need from $25,000 to $30,000 to start with," Mr. Hill said, and then in order to make a close and accurate estimate he asked State Engineer Ralph, of Minnesota, a number of questions, among them the probable cost of a topographical survey of the Red River valley fifteen miles wide for a distance of 200 miles. Mr. Ralph thought that $30,000 would cover the cost, and explained that such a survey had been made of several of the counties under the supervision of the government.

"Now suppose that this land that we propose to put under a good system of drainage," Mr. Hill continued, "costs $5, $6, or $10 per acre—I am looking to a perfect system of drainage, where a man's lands would be tile drained, and if you had expended $6, $8, or $10, if you add $50 to the land or to the yield, that would represent the interest on $50, let me tell you that it is an investment you cannot afford not to make it. Your land here, as I stated before, is worth $100 per acre when it is put in proper shape—every acre of it. All the public domain in the United States where men can make a settlement and make a homestead, and cultivate the land without irrigation is gone. Uncle Sam has not land enough to give us all a farm any more. There is no more public domain where we can make a settlement and make a homestead without irrigation, and it is estimated that the government can reclaim fifty million acres at an expense of $20 to $30 per acre. What will a poor man do with land at $20 to $30 per acre. He has got five or six little children and a good wife and lots of courage. Let him try to make up $20 to $30 per acre and pay it during his life time, he would not believe it so easy and wouldn't have so much courage left when he got through. Suppose this land were laid out in fifty-acre farms. You could take care of a million families. Last year a million people came over from Europe to America, the natural increase is one and a half millions. We will increase at the rate of two millions and a half a year. You have got to learn to cultivate your land more intensely. Looking the question up I have averaged the crop yield of wheat in England at about 30 bushels to the acre. You ought to raise with the same kind of cultivation, and would raise, 40 bushels or more.

"Now to make a start. You have to get a survey, or if you can get the state or the United States to do it all right. But if you cannot then take it up with some intelligent man and I will assure you that if I cannot come here to help you dig the ditch or make the survey, I will do like the miner who went to California, who said, "I can write home," and I will be glad to bear one-third of the expense with you. If it costs you $30,000 you raise $20,000 and I will raise $10,000.

"It is your funeral or it is your fortune—one or the other. See that it is not your funeral. See that this work when you take it up, that it is put in the hands of a competent man, a man who will be in earnest, who will do his duty, a man who won't put in a bill for four dollars for one. You know a scalded dog always fears hot water, and that is probably why I speak this way, but whatever you do, have it well and intelligently done; get the best experienced engineer you can get. You may take a man who is able to go to your university and teach engineering in all its branches, he would not do as well as the man who has had less qualifications as a professional man but has had experience. Let it be done by some one who has experience and then you will succeed."

Written for The Clay-Worker.

AN UP-TO-DATE PLANT IN LOUISIANA.

EARLY IN 1895, Mr. John Buck left Morris, Ill., and moved to Louisiana. After carefully looking over the country he decided to locate in Lake Charles, a beautiful and growing town in the southwestern part of the State. As Mr. Buck was a brickmaker in Illinois, he decided to continue his chosen profession in this new field, and accordingly the firm of John Buck & Sons was organized and continued to do business under this management until 1898, when one of the sons, Mr. H. E. Buck, bought out his partners and continued the business under the firm name of "H. E. Buck Brick Manufacturing Company," and from that day Mr. Buck has operated his plant continuously, making, drying and burning brick, until now Mr. Buck believes he has an outfit that fully meets the demands—that is, making a good building brick at a minimum cost.

The power plant consists of a 100-horsepower H. S. & G. twin engine and boilers. The machinery for preparing the clay is situated after careful study and is so located as to best prepare the clay for each machine, so that the machine may thoroughly do the work for which it is built. Thus the hoist is located highest in the building, hauling the cars where with ease they can be dumped into the granulator. This machine with its thirty odd knives cuts up all the larger lumps, and the clay being just as it was taken from the bank, is in a condition to be thoroughly pulverized, as the knives cut through and steadily push the clay forward, so by the time the clay is discharged into the disintegrator, which sets directly under the granulator, all the large lumps are gone, also the roots (if there be any) and allows the disintegrator to do its work well; that of breaking up and pulverizing the small lumps. From the disintegrator the clay passes into the pugmill, where it can be thoroughly pugged and fed into the machine. The clay-preparing machinery was built by the Wallace Manufacturing Company, of Frankfort, Ind. The brick machine proper is a No. 5 end-cut machine built by Chambers Brothers Company, of Philadelphia, Pa.

General View of Plant of H. E. Buck Brick Manufacturing Company, Lake Charles, La.

One of the cuts shows one of Scott's elevating and lowering cars at work in the kiln. Mr. Buck was one of the first to see the advantage of this method of drying brick. The burning has been done both in up-draft and round, down-draft kilns. Mr. Buck is now preparing to erect one of Morrison's improved kilns.

The yard is located on the St. Louis, Watkins & Gulf Railroad. The Kansas City Southern and the Southern Pacific railroads also run into Lake Charles and afford ample shipping facilities. Mr. H. E. Buck personally manages the plant and is justly proud of the yard. He takes great pleasure in showing all brickmakers the results obtained, and is equally frank in telling when an experiment was a failure as when it was a success. He says all brickmakers should do this and save each other time and money.

Written for The Clay-Worker:

WHAT I DON'T KNOW ABOUT BRICKMAKING.

Number Three.

WHAT I DON'T KNOW about brickmaking would make a bigger book than I have time to write this season. In every department of our work there are many unsolved problems.

The labor question I have written on before, and hope to be able to discuss it more fully when I learn more about it. It is beyond the present state of my mental acumen, and I shall not say much about it at the present, but labor conditions must change; one side or the other, or perhaps both, will have to be placed upon some kind of basis different from the present conditions, or else the cost of labor in proportion to its efficiency will prove too great a handicap to improvements for the public to bear.

We wish we could give a recipe for the cure of all labor troubles, but we have not any now on hands, and, like some of the scientific puzzles mentioned in former articles, we may be forced to leave this subject to more competent minds. But should we ever discover such a remedy, we shall get no patent on it, but shall gratuitously bestow it as a legacy to posterity.

But there is another subject that disturbs my dreams of profits about as much as the labor question, viz: the subject of fuel. I have come to the conclusion that I know less about this than about any other subject connected with brickmaking.

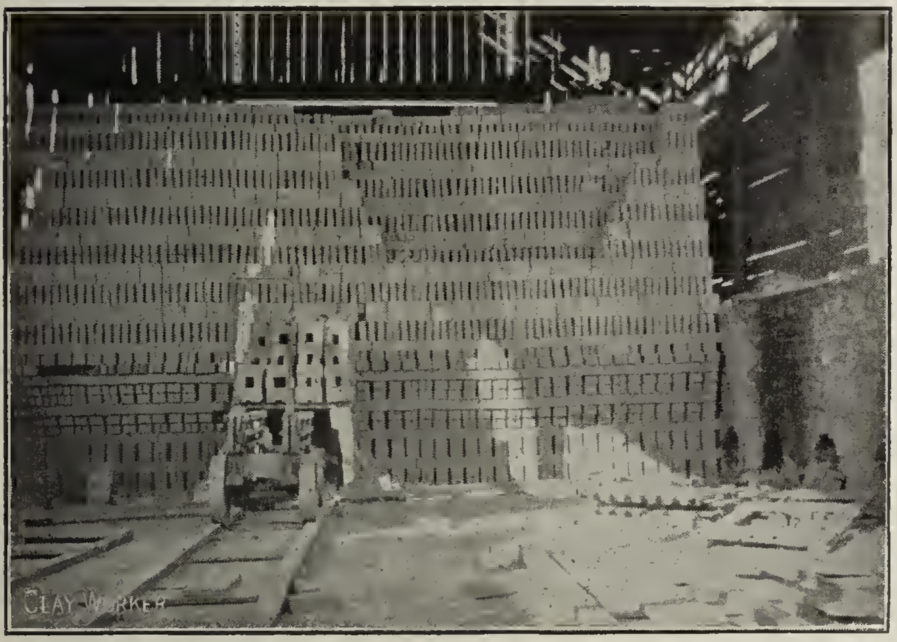
Kilns and Sheds at the Plant of the H. E. Buck Brick Manufacturing Company, Lake Charles, La.

There is just one consolation in the whole matter to me, and that is that I have learned to get good results, though the cost sometimes makes me feel that I have paid too dearly for my successful burns. There might perhaps be named another consolation, the old one that misery loves company, for I find so many of my brethren in the same predicament that we have not much advantage one over the other.

I have often wondered just what per cent. of fuel energy we succeed in getting from the coal which is annually shoveled into our furnaces. I have made no experiments along this line, and can form but a very vague idea as to the answer to this question. I simply know that some burners consume far less coal than do others to accomplish the same results, and that some construction of kilns and furnaces take less fuel than others. But as to the amount of fuel energy escaping from the stacks before it has done us any good, I have no method of determining.

It takes almost one ton of coal to make, dry and burn one thousand bricks. One may judge from that what an important item of expense is the fuel of the brickmaker, and it seems time that someone was doing something along the line of fuel saving. I am at work on that matter all the time, trying this kiln and that furnace, but the results are still about as stated above—one ton of coal to one thousand bricks. Sometimes we use less coal, but the results fall short of our ideals, and then for the next kiln we shovel in more coal, for hard bricks are more to be desired than cheap bricks.

I shall say a few words here in regard to furnaces. We use three varieties of furnaces—common grate furnace, grates 3 feet long, and two styles of coking table furnaces. Most of our furnaces are the grated kind and have been in use ten years. We get good results from them, but the expense of keeping up grates and other repairs is a considerable item. Grates will not last more than two seasons on the average, and this makes a grateless furnace a very desirable consideration if they prove a success. Besides this expense of supplying new grates, there is so much labor required to keep the grates clean during fires, especially with the grade of coal to be found in our territory. This coal clinkers very badly, and the burners' hardest task is to clean the clinkers from the grates. This takes so much time that the furnace doors are kept open so long for this purpose that a great deal of cold air gets into the hot kiln, checks the bricks next to the bag walls and causes considerable loss in time and fuel. It takes the best lump coal to get good results from our grate furnaces.



Filling a Kiln with One of Scott's Elevating and Lowering Cars.

Coking Table Furnaces.

We use two styles of these furnaces, which we shall not attempt to describe here, but sufficient to say they are both patented and are advertised in The Clay-Worker. We commenced the use of the coking table furnaces about three years ago and are better impressed with them the longer we use them. We got them expecting to use slack coal in them, and thus save a great deal of expense in fuel. But on account of scum on our bricks, we were forced to watersmoke with lump coal, and we finally discarded the use of slack altogether.

If we lived near a mine, so that our slack would cost us but a nominal sum, we would still use it; but when one has to pay 70 cents per ton freight on slack, and bear the rest of the expense of handling it, the economy of its use is a doubtful question.

We find that the coking furnaces may be fired with much less labor than the grated furnaces, and somewhat economical on fuel, but they are not such fuel savers as we had been led to believe when we built them. So that in the matter of fuel saving, we have not learned much during the last few years. Its cost still produces anemia in my pocketbook, and the solution of its hard problems still seem as far distant as if I had never lost any sleep trying my hand and brain at unravelling its mysteries. However, I am very well pleased with the coking tables, as they enable us to use up the fine coal to better advantage than with our old furnaces. Besides, they are so constructed as to shut out all unnecessary cold air, and the bricks are generally not checked so much over the bag walls. But this close draft has one drawback: we find that the bricks are more inclined to whitewash in the kilns having coking furnaces, for the reason that it is almost impossible to produce a free oxidizing heat in them. Often our red bricks are flashed with brown in this particular kiln, and, though we get the best of pavers from it, we do not look for our red brick in there. It may be that our clay is rather peculiar and that these furnaces could be adapted to it if one should take the pains to look into the matter thoroughly; but as we have but one kiln fitted with coking furnaces we burn pavers in it and red brick in our other kilns.

(To be continued..)

A NEW BRICK CUTTER.

The Hix "Happy Thought" side-cut automatic brick cutter is illustrated and described in a neat little booklet presented to the trade by the Wallace Manufacturing Company, of Frankfort, Ind.

The "Happy Thought" cutter is built on an entirely new idea from any cutter now on the market and is destined to win favor among the manufacturers of brick. It is built in the form of a reel and travels in a direct course. The large wheel, which carries the cutting wires, is guided by four roller-bearing disks, thus giving a positive movement. In this gear are fixed cams with roller bearings, to which the wires are attached. As the wire strikes the bar of clay, this cam carries the wire forward in the clay until it has passed entirely through. On the side of the table opposite the column of clay is a set of cams which throw the wires back into position.

The speed at which the bar of clay is driven from the machine governs the speed of the cutter, hence the nuumber of brick cut by same is according to the amount of clay furnished it.

This cutter will cut end-cut brick, conduits and hollow blocks equally as well as side-cut brick and they are cut absolutely square and any length required. There are no clutches, springs, etc., on this machine to cause annoyance and no heavy, uncouth machinery to get out of alignment as is usually found on automatic cutters.

This booklet will be sent to any address for the asking.

OUR SOURCE OF WEALTH.

Within the last decade there has been an enormous increase in our manufacturing interests, so that it is not surprising to find that the output from the factory now constitutes 65 per cent. of our annual production of wealth. A study of the figures presented to us in the annual reports of the Department of Agriculture and other branches of the government dealing with agricultural development alone, without reference to statistical matters, shows that coincident with the development of factories in a community there has been a corresponding increase in the value of farms and farm lands as well as of the products of the farm. The great era of manufacturing upon which this country is now entering is bound to have a beneficial effect upon agriculture, for aside from the great possibilities of other industries, it is clear that as factories continue to increase in number and enlarge their output, agriculture must necessarily grow to meet these conditions.—Scientific American.

BY THE LIGHT OF THE KILN FIRE

THE COLONEL ON THE IDEAL TRADE PAPER.

"YES, SUH," the Colonel said, "I have been thinking over the matter of suggestions with a view to attaining a higher degree of perfection in the trade paper, but it's lots easier to think than it is to arrive at a conclusion, just as it comes handier to find fault with a man for not doing this and doing that, than it does to make suggestions for improvements that are worth while. Anybody and everybody can find fault with a paper, and most of us do, and think we could run one better than any of them are being run, but that's about as far as we get with it. I have tried to follow the trail a little farther than this, and may be I have followed it, and may be I have taken a false scent, but I am going to give it to you for what it is worth.

"If I were going to start into the paper business, I would hang up before me two questions and then write under them to the best of my ability my answers. I might from time to time think it necessary to add other questions and alter the answers, but as a starter, suh, I would hang up these two questions:

"Whom shall I seek to please and benefit with the reading matter in this paper?

"Answer: The reader.

"Question: How am I to know in advance what will please and benefit?

"The answer to the first question I figured out to my satisfaction, but to the second I might say that echo answers, 'How?' Or I might say, 'Seek and ye shall find;' but neither one is tangible enough, and any way the answer is one that is likely to not remain a permanent quantity, but is ever changing, as mankind is changing from day to day, both in disposition and needs."

"But, look here, Colonel," I put in, "you say the paper should be run for the benefit of the reader, yet the reader only pays a couple of dollars a year, while the advertisers pay hundreds of dollars. How do you make that out to be fair? Does it not look like the paper ought to be run for the benefit of those who contribute most to its support?"

"Excuse me, suh," the Colonel replied, "but here is where I'll have to make a play on words and trip you up on your own saying. A paper should certainly be conducted for the benefit of those who contribute most to its support, but you have not followed the trail to the end to find out who contributes most. That's where some trade paper men fall down; it's where the trail kind of doubles back on itself and you get lost, for if you follow it out right to the end, you will find where it works out all right, that the reader is the heavy contributor. However, let us not jump across the loop in the trail, but follow it around and we will come to your point in a minute. In the first place you must both obtain and retain the interest and respect of the readers before they will have proper respect for the advertiser in the paper, and the more respect and confidence you gain, the more they learn to rely on the truthfulness and wisdom of what you say, and the more willingly they will respect the statement of advertisers and the more interest they will show in them. Also, the welfare or prosperity of your readers is the first essential to the prosperity and success of your advertisers. The readers must be taught and inspired to make progress and to make money, otherwise they will never have the incentive or wherewithal to purchase the machinery and supplies offered by the advertisers, so you are indirectly serving the purpose of your advertisers by conducting a paper for the interest and welfare of the reader. Now, then, if you accomplish this in goodly measure, the logical result should be that the reader not only pays back to the advertiser what he has expended for space in your paper, but more besides—enough to pay for the product and leave a margin of profit for the advertiser. You begin to see by this time how we come around the loop of the trail, don't you? And it is really the reader who contributes most to the support of the paper. They contribute it all, in fact, should this logic be worked out in perfect sequence, but of course perfection is not human, and everything spent for advertising does not bring its returns. Still, when it does not, the fault is frequently with the advertiser, and any way there is enough that does to make a majority to hold the rule good and leave the others as an exception; therefore, the end of the trail leads to this: Though a larger part of the returns come indirectly, it is the reader and his welfare on which any paper must depend for its support.

"That point being settled and the next question being turned to, we are up against that echo, 'How?' You might ask the readers what they want and that they tell you what will be best for them, and get some information, but the chances are you will get left, suh. They do give you a pointer here and there that contributes a lot toward the welfare of the paper from a mental and moral, as well as a financial standpoint, but it's up to you to figure out for yourself in advance what they will like and what will be good for them. You know how it is with milliners, with clothes people and various other lines. It is the producers themselves that create the new styles of things. Sometimes they take well and sometimes they don't, and that is the point you want to get at; to develop your faculty for anticipating both the wants and the needs of the people.

Let us look at it for a minute as if you were going to prepare a feast once a month—and that's what it is, a mental feast, and may be we can get some suggestions out of what it will take to prepare a feast for the physical man. First, it is not enough to furnish and disseminate information and advice, any more than it is enough to furnish bodily food and refreshments. It must be prepared, well cooked and seasoned, and invitingly served, from the start to finish, or from soup to cigars. That means, of course, that there must be other things besides bread and meat, and there are various ways of serving up meats. The technical and commercial elements are the meat and bread, so to speak, and there is news for the sauce or gravy. Then there should be some salads and side dishes of one kind and another to add relish, and for this you must turn to stories of a kind that will harmonize with the rest of the menu. You must remember all the time, too, that it's a big gathering that sits down to your feast, and where there are lots of people there are lots of different tastes, and you can't hope to humor all of them all the time, but you can get something good and something inviting for somebody all the time, and something that will especially appeal to some people, but here, suh, I've got to stop or else I'll be off on a long story about a great editor I knew, who used to make it a point to write something every day that would especially appeal to some certain man whom he knew. There is no use to start on that story, though, and I am going to stop right now by telling you that you are doing mighty well, so keep it up and keep coming around, and when I see a trail that looks like game, I'll tell you about it."

The child that has been burned oftenest doesn't necessarily know the most about fire, but the chances are that it remembers better what it does know.

STEAM ECONOMIES.*

By A. M. Wickens.

SMALL LEAKS that any engineer can find such as base or uncovered steam pipes or leaking joints, leaking safety valve or blow-off cocks.

A 3-inch pipe 30 feet long with 100 pounds steam pressure will condense one pound of steam per hour, per square foot of surface and in a 30-foot run amounts to 20 lbs. per hour or 240 lbs. per day, or for a run of 8 months 49,920 lbs. of water. Under ordinary practice this will take from 7130 to 8000 lbs. of coal and the cost will be from $14 to $15, coal computed at $4 per ton.

A leaky safety valve or a joint blowing continuously is also a great waste. A round hole 1-16 inch in diameter has an area of .00307 of an inch. This seems a very small opening, and it is small. Now this small hole will discharge .307 of 1 lb. per minute and for a 12 hour run 221 lbs. for 8 months it amounts to 45.968 lbs. and costs in coal $13.13, figuring the coal at $4 per ton. These figures are based upon an evaporation of 7 lbs. of water with 1 lb. of coal. Many boilers do not exceed 5 lb. water to 1 lb. coal burned,—when this is the case these losses would increase by 25 per cent. A leaking blow-off cock only going drip, drip, drip, will allow 150 lbs. of water to pass in 24 hours. This would amount to 31,200 lbs. in eight months run. This amount of water has received enough heat to turn it into steam at 100 lbs. pressure or 337.86 degrees, there is also 876 heat units known as latent heat in each lb. Now all this latent heat and part of the sensible heat has been used up in forcing the water through the small openings that we call a leak and our drip, drip, drip, appears as a small leak of hot water and this 31,200 lbs. of hot water has cost 6,770,400 degrees or heat units. Now a good average coal has 12,000 heat units per lb. and in a well set and well fired boiler, we convert about 70 per cent of them into steam. We have 8,400 useful units of heat and by dividing that into 6,770,400 we get 800 lbs. of coal that has been wasted or coal enough to drive a 50 h. p. engine for 4 hours.

Other wasteful leaks are cracks through the boiler walls, badly set boilers, poor draft and poor grates. For the perfect combustion of coal we need the oxygen in the air, and if we mix the air and the carbon in the coal right we get perfect combustion which is a white, hot fire and no smoke. If we allow too much air through the fire or any air enters through cracks in the walls the temperature falls and our results are poor. If we do not allow enough air the combustion is bad, and the heat low. 1 lb. of carbon burned to carbonic acid gas will give off 14,600 heat units if our supply of air is reduced, say one-half we burn the carbon into a marsh gas that only gives 8,400 heat units and consequently the loss is at least 40 per cent of the heat in the coal.

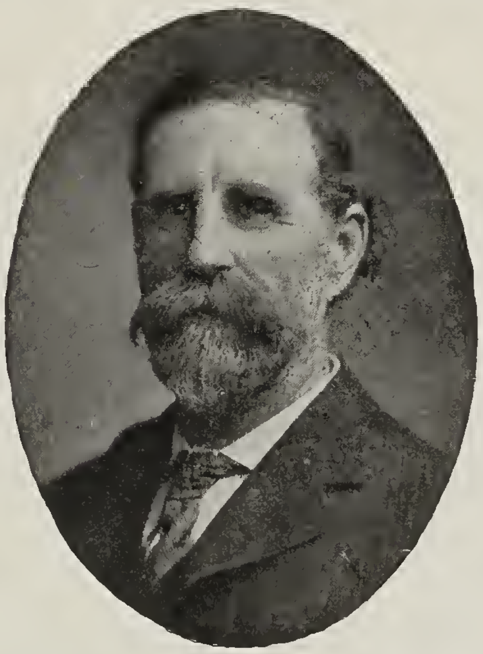
These are simple things that any ordinary engineer should know how to fix and regulate.

HEATING.

No plant should be without a good feed water heater, for each 10 degrees added to the feed water from our waste heat, such as by exhaust steam, we can save one per cent. of fuel, so that if we add 150 degrees to it we save 15 per cent.

Our best engineers do not utilize more than 10 per cent. of the heat units in the steam, so the other 90 per cent. is lost. The principal loss occurs in the exhaust steam, and the use of this waste heat is where we must look for economy. Then first use it for heating the feed water. In heating feed water from 60 to 210 degrees we will condense about 2-11 of the steam used in the heater, the rest may be used for various purposes.

I am not a brickmaker, but I know there is great need of some means to dry bricks as quickly as possible and as every brick has 1 1-4 lbs. of water to be dried out of it before it goes to the kiln, why not use this waste heat for that purpose. To accomplish this do not attempt to do so by any arrangement of steam heating pipes in the drying sheds, for if you do you will surely fail. The only way it can be accomplished is by using warm dry air. Air warmed to 100 degrees Farenheit is capable of taking up moisture at the rate of 15 grains per cubic foot of air but because the air is not quite dry we will say that each cubic foot will take up 5 grains of moisture so that 1,000,000 cubic feet will take up 1,000 lbs. of water. Now if we make 60,000 brick a day at 1 1-4 lb. of water per brick, we must carry away 75,000 lbs. of water in 24 hours, this would take approximately 3,000,000 cubic feet of air per hour and if it is properly applied to the brick will dry. The expense of moving this air will be the power required to drive a fan, each 1,000,000 feet of air moved under a pressure of 1-4-inch of water will require 1 h. p., but in practice this should be more than doubled. I would say 8 h. p. would be necessary. The exhaust steam from the engine should be discharged into a box coil, and the air heated by the fan drawing or discharging through the coil. The exhaust steam from a 50 h. p. engine will heat 6,000 square feet of coil or 18,000 running feet of 1-inch pipe and if this is distributed so the air must strike the hot pipes in getting through it can be heated up to 130 degrees without putting any back pressure upon the engine. A pipe coil so arranged will heat the necessary air, all the water of condensation should be returned to a tank and pumped back to the boilers. Engineering advice about arrangements of steam plant, well-arranged yard, is needed for fuel economy. You would not go to a lawyer if you had a bad case of fever to treat, neither can you save any money by expecting a brickmaker to advise you in the problem of steam economy in a brick yard, this takes engineering ability.



A. M. Wickens, Toronto, Ontario.

Gentlemen, I thank you for your kind indulgence while I have made these few rambling remarks.

H. S. GRIMES HONORED.

At the recent election of officers of the Board of Trade, Portsmouth, Ohio, Mr. H. S. Grimes, president of the Portsmouth Press Brick Company, was re-elected to the presidency. This makes the fourth time Mr. Grimes has served the Portsmouth Board of Trade as president. It is quite evident the members appreciate Mr. Grimes's executive ability, which was well demonstrated at the last N. B. M. A. convention, when Mr. Grimes served as chairman of the Committee on Resolutions. Mr. Grimes is a brother of George S. Grimes, of Terre Haute, the nestor of American brick paving engineers.

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*A paper read before the Ontario Clayworkers' Convention, Hamilton, December, 1906.

Written for THE CLAY-WORKER.

THE BRENHAM PRESSED BRICK CO.

IN 1903, Messrs. Robt. Strickert, Jas. H. Simon and C. G. Botts organized the Brenham Pressed Brick Company, at Brenham, Washington County, Texas.

Brenham, formerly was important only as a cotton market. It is situated in the heart of the richest farming, lands, for the "black lands of Washington County are famous, and the Brazos and Yegua "bottoms" are close at hand; but there were a series of disastrous cotton years, through floods and other causes, and the people of Brenham began to look for other resources than cotton. A bed of clay was found just outside the town which, when analyzed, proved to be of excellent quality for fine face brick.

The company organized, erected four kilns with a capacity of 250,000 each, and a Ross-Keller 4-Mold Press; and began to burn. At first they experienced the usual discouragements; several kilns were spoiled by the use of impure clay found on the surface of the beds. There was—it is supposed— lime in these strata, which caused cracking of the brick. But digging a little deeper, under a layer of rock, a purer stratum of clay was discovered, and the results of the firing since the use of this layer, have been uniformally good. The clay in this bed is a "joint clay," and has been pronounced by Prof. Phillips—so I am told— to be much too good a clay for brick, as it is entirely suitable for tile and other more expensive products.

Up-Draft Kilns Under Fire at Plant of the Brenham Pressed Brick Company.

The illustrations on the following page show the clay-beds, which are within a few hundred yards of the works.

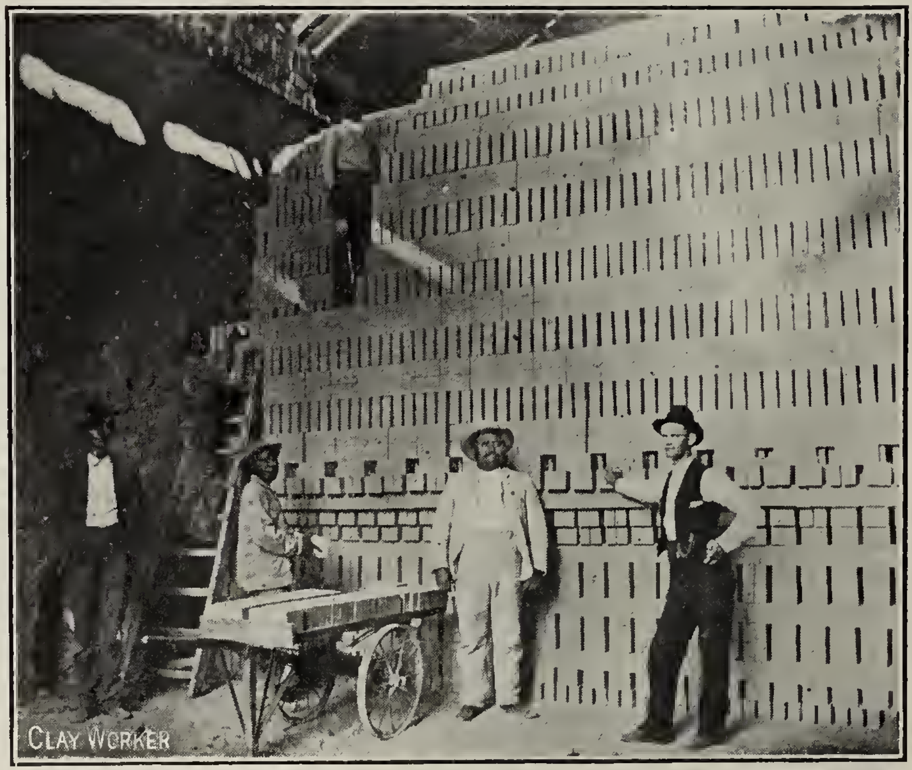
Oil is used in burning the brick, now this has reduced the cost of manufacture almost one-half. The economy of oil fuel in the southern, eastern and central parts of Texas, is a great advantage to the clay works situated within these regions.

Labor is the chief difficulty the manufacturer has to contend with all through Texas. Here in Brenham negroes and an occasional Mexican are employed, under a white superintendent. The Mexicans are sometimes remarkably skilful. One of our illustrations shows, near the top of the kiln, one of these careful and artistic brick-setters, his work half done.

There are few prettier sights than a freshly burned kiln of these Brenham brick, opened to view. The color scheme is one to delight an artist's eye. This clay burns first a pale red, almost a shell pink, then buff, then straw or cream, and finally at the centre where the heat is greatest, a greenish yellow. Watching the discharging of the brick, one can see all these gradations of color, and can fancy what charming results a clever architect could achieve with such a harmonious and varied assortment of tints in one kind of brick.

For the trend of artistic taste is nowadays toward a utilization of all the varieties of "accidental color" obtainable in ceramic products. Architects no longer insist on uniformity of tint in brick or tile, in smoothness of glaze, or other mechancial perfections, which, fifteen years ago, were supposed to represent ceramic perfection. There is a strong tendency to make bold use of ceramic variations, even of flaws and imperfections in glazes, to give variety and the "individual touch" to each bit of craftsmanship.

So it is easy to foresee a wide market among discerning architects for these beautiful bricks, with their subtly varying shades of pink and buff. From the reddest of them, the new Central-Santa Fe passenger and freight station, and also the new Wells-Fargo Express office at Brenham have already been built. Mr. Strickert is also building a small but interesting little cottage for a member of his family, which promises to use, besides the ordinary rectangular brick, some of the fancy brick made in the Fernholtz hand-press, which the company now owns. Ethel Hutson.



Setting Brenham Pressed Brick in Kiln. Messrs. Simon, Strickert and Botts in Foreground.

CANADIAN SEWER PIPE PLANT DESTROYED BY FIRE.

The Hamilton and Toronto Sewer Pipe Company's factory at Hamilton, Ontario, was totally destroyed by fire May 1. The blaze got a big start before the firemen arrived, and everything was burned. The loss will be about $50,000, partially covered by insurance.

HIS OWN DESIGN.

An English manufacturer of pottery is the subject of a joke told in the Liverpool Post. While on a continental tour he purchased a Sevres vase for some hundreds of pounds, and brought it home most carefully. Thinking that the foreman of his works might gather a hint from the design, he called that gentleman in and showed him his treasure. "How do you like it?" he asked. The foreman took the vase in his hand, turned it over, and returned it with the brief reply, "I don't think that I can learn much from it." "Why not?"

asked the manufacturer. "I don't like telling you, sir." "Come—out with it." "Well, I designed that vase myself. It is a foreign imitation of our own work, and is worth £5 at the outside."

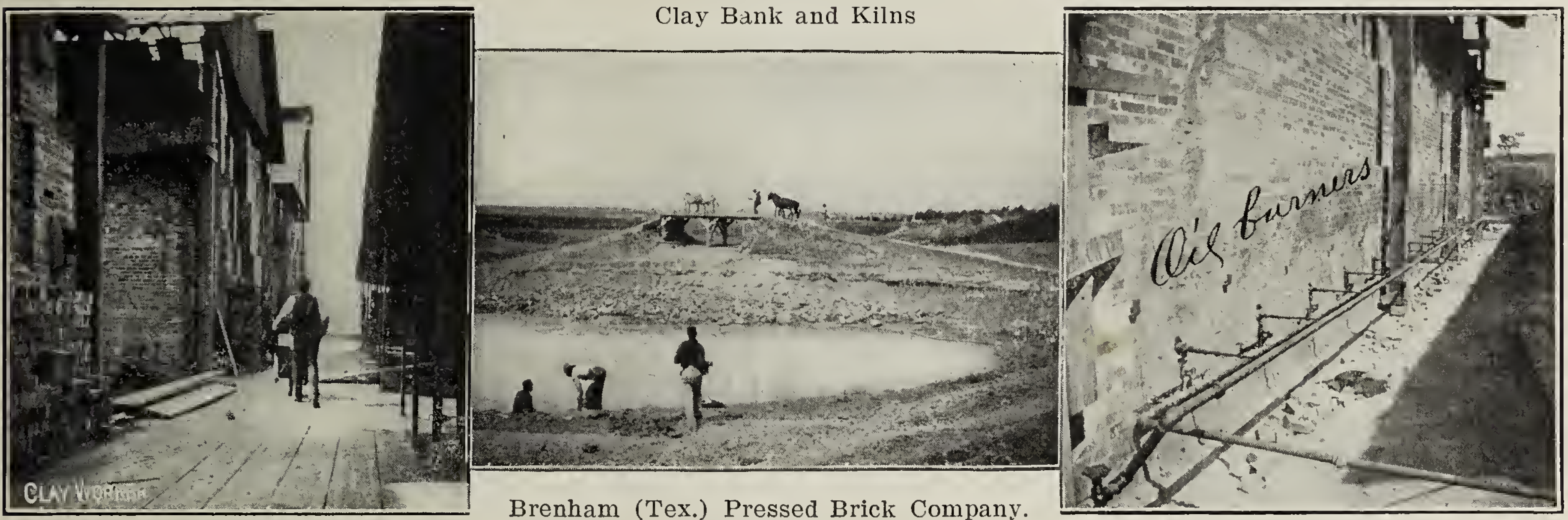
Written for THE CLAY-WORKER.

THE POWER PROBLEM AND PRODUCER GAS.

"PUTTING TWO AND TWO TOGETHER, and then adding another," said the Observant Reader, as he came in to borrow a bunch of exchanges, "impresses me with the idea that when we solve the brickmakers' fuel problem for his kilns by turning to producer gas, we may also at the same time solve the power problem of the brick plant." Then, tapping the palm of his left hand with the forefinger of his right hand, the O. R. proceeded to elaborate his deduction as follows:

"Of course you remember, as everybody else does, the able paper and discussions at the National meeting on the subject of "Producer Gas for Burning Brick." It's a great idea and it's going to keep growing, and as it grows we are going to find more greatness to it than we were able to see at that time. In the report of the Illinois meeting I read that interesting paper by Warren Ittner on "Economy in Steam Power," and took special note of his quotations from Mr. A. M. Wickens, Chief Engineer of the Canadian Casualty Boiler & Insurance Co., which says: "But where a man has heat to use or where a man has the opportunity to utilize heat I think it is a long way between now and the time the gas producer or electricity or coal oil or gasoline will beat steam. Just as soon as we begin to study the use of exhaust steam, if we are going to get back the heat we put into the steam after we have run our engine, it is going to keep all the new ideas working very hard to beat us very much. Just as soon as we begin to study and work out properly utilization of the waste that we are making from our steam, just so long are we going to keep the other fellow hustling." And in my opinion he is correct in this. We must have steam or heat in one form or another about a brick plant, whether to dry brick or heat dies and if it is properly and economically generated and its heat energy used to the limit, there will be few, if any of the newer methods of power generation able to equal the result.

Clay Bank and Kilns



Brenham (Tex.) Pressed Brick Company.

"Now, there is some good logic in that matter, but it gets started off on the wrong foot. It takes off after the idea of utilizing waste heat, etc., from exhaust steam. It's a good idea just as it is a good idea to know how to catch a horse after he gets out of the barn, but it is a better idea to know how to keep him from getting out of the barn, or rather, it is a good idea that we should use first.

"Just after reading the report of the Illinois meeting I got hold of a Government bulletin that recalls some experiments made at the St. Louis Fair on fuel for power, wherein it was shown that it is decidedly advantageous to reduce coal to gas and use the gas in an explosive engine. Pulling a paper from his pocket the O. R. said: "Here's the latest word from the Government on that subject. Listen:

"Now that the coal strike is upon us, it may be interesting to the people of the United States to know that they spent approximately $1,500,000,000 last year for fuel for the production of power, light and heat. With the steady increase in the number of our manufacturing industries, our need for fuel is not likely to diminish as the years go by, nor is it probable that our annual expenditure for the material with which to produce power, light and heat will become less. In view of our accumulating needs and the growing difficulty we may have in meeting them, the statements recently made by Government and referred to the Senate Committee on the Geological Survey are such as may well make every patriot pause.

"These statements are to the effect that the losses in the utilization of fuel for the development of power, light and heat under existing conditions are so great that in a ton of coal consumed in an ordinary manufacturing plant, less than 5 per cent. of the total energy is available for the actual work of manufacturing; that in an ordinary locomotive, only from 3 to 5 per cent. of the fuel energy is obtained for pulling the train; that in our houses ordinarily not more than one-seventh of 1 per cent. of the fuel energy is actually transformed into electric light; that gases from the blast furnaces of the country are now lost in the atmosphere that would yield continuously, if properly utilized, more than 2,500,000 horsepower; and that by-products might be saved from the 40,000,000 tons of coal which we now convert into coke that would have an aggregate yearly value much greater than that of the coke itself. These by-products would include ammonium sulphate sufficient to fertilize our farms, creosote for the preservation of our timber, and pitch enough for briquetting our slack coals, roofing our houses, and repairing some of our roads.

"How appalling that such waste should continue after we know that it exists! Unfortunately, it is not always clear even to those who best understand the nature and uses of coal how such economies may be effected. No methods, for instance, are known by which more than one-sixth of the nitrogen in coal can be saved in the manufacture of coke. There is no subject touching the welfare of the human race on which research is more needed than economy in the use of fuel.

"The results of the fuel investigations conducted at St.

Louis during the Louisiana Purchase Exposition by members of the United States Geological Survey are so encouraging to both producers and consumers of coal that the nation may well take to heart the continuance of those investigations. Persons desirous of knowing more about this work should apply to the Director of the United States Geological Survey for Professional paper No. 48. In comparison with the immense sum annually expended for fuels, the amount of money necessary to carry on this work for several years seems a mere trifle, especially when the magnitude of the interests involved is considered. The recommendation of the Director of the United States Geological Survey that the sum of $250,000 be appropriated by Congress for the investigation of the coals, lignites, and other fuel substances of the United States during the fiscal year ending June 30, 1907, should therefore meet with the enthusiastic approval of the whole people, since it is a matter that concerns every citizen."

"Now," continued O. R., "what I said about putting two and two together was the putting together of the arguments of the National meeting in favor of the adoption of gas for fuel and burning brick, and the idea of economy in the power plant discussed at the Illinois meeting. When we consider the Government tests at St. Louis which show a decided balance in favor of the explosive engines, the thing we make out of it is an additional and strengthening argument in favor of the use of gas instead of coal in clayworking and making it cover not only the burning of the brick in the kilns, but the supply of power to drive the machinery of the plant. Just paste that idea down and stick it in your hat for use at the next clayworkers meeting and see what the boys can make out of it"

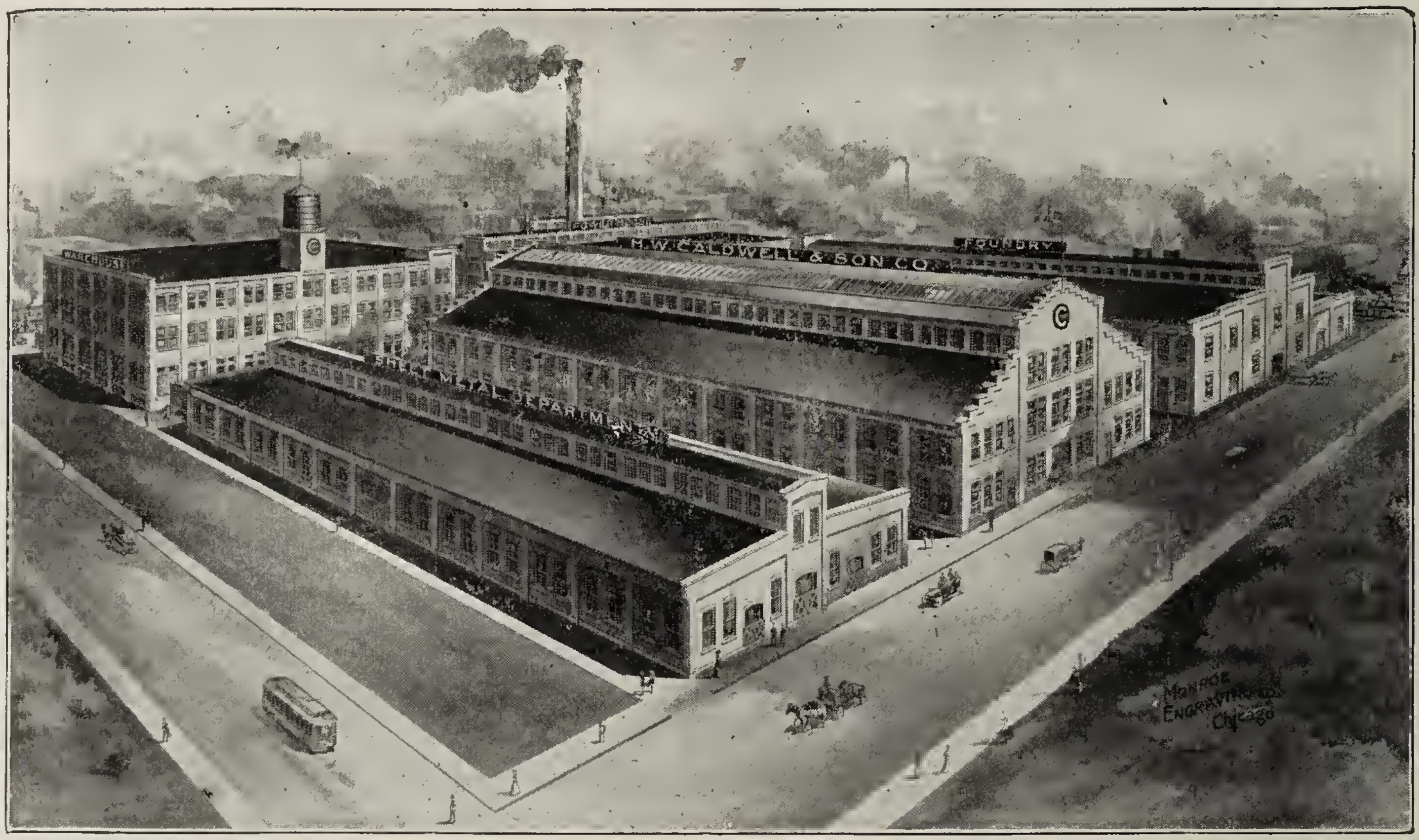
POST PIPE COMPANY'S NEW PLANT IN TEXAS.

The Post Pipe Company, of Texarkana, Texas, put in motion the machinery of its immense plant, for a trial, May 1. The plant was not formally set to work till May 12. This is one of the few tiling and sewer pipe plants in the South, and has been built at a cost of approximately $100,000. It will employ about seventy-five men, and turn out 1,000 carloads of manufactured product yearly.

A MODERN FOUNDRY.

OF LATE YEARS the H. W. Caldwell & Son Company, Chicago, have given more than ordinary attention to the manufacture of large pulleys, band wheels, fly wheels, sheaves, gears and other heavy castings. This branch of their business was given increased impetus when the Caldwell Company something more than four years ago acquired the patterns, preparations, molding machines and other appliances for the manufacture of the well-known Walker machine-molded gears and other heavy power-transmitting machinery formerly made by the Walker Manufacturing Company, of Cleveland, Ohio. The trade in this line of work, together with their general requirements in the way of castings, has grown so steadily that the Caldwell Company has been compelled during the past year to add to their plant the large new foundry shown in the accompanying illustration.

The foundry building is 115 feet wide and 184 feet long. On the ground floor is the center or main bay 50 feet wide, full length of the building, and containing a water-tight circular pit 50 feet in diameter and 10 feet deep. This is used for molding fly wheels, band wheels and general heavy work.



Factory and Foundry of the H. W. Caldwell & Son Company, Chicago.

Along either side of this bay is a narrow gauge track separating it from a 32-foot side bay served by small electric cranes. Over the main bay is a 20-ton electric traveling crane capable of 50 per cent. overload and having an auxiliary 5-ton hoist. Above the west side bay is the charging and storage floor, having a weight-sustaining capacity of 750 tons. Over the east side bay is a 32-foot wide gallery, full length of building, used for snap-flask and bench molding. The charging floor and gallery have the usual narrow gauge tracks and trucks, and material is taken to and from these floors by electric elevators. The average melting capacity of the present cupola is 12 to 14 tons per hour. Arrangements have also been made for another and larger cupola.

This new foundry has not only added to the Caldwell company's line larger and heavier work than has hitherto been possible but has enabled them to give their customers a service more prompt and satisfactory in all lines.

The installation some time ago of a Niles boring and turning mill capable of finishing castings as large as 20 feet in diameter and 8-foot face also enables the H. W. Caldwell & Son Company to furnish heavy castings finished as well as in the rough.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Prospects Good in Nebraska.

Editor THE CLAY-WORKER:

Enclosed please find draft for $2.00, in payment of our subscription for the ensuing year. Prospects are good for coming season. We are putting in a Goodwin Hot Floor Dryer now. It was impossible to fill our orders last season on account of rain. Too much humidity in the atmosphere to dry brick.

Kearney, Neb. Hibberd Brick Co.

Information Wanted in Regard to Dimension of Stacks.

Editor THE CLAY-WORKER:

Enclosed herewith you will find our check for four dollars for the years 1905 and 1906. Can you inform us as to the dimensions of a square stack, inside measurements; also the height that it requires for three kilns which measure as follows: length, 18 ft; width, 16 ft.; height, 10 ft.; use 3 ft for crown. We remain Respectfully yours,

Philadelphia, Pa. Geo. and Wm. Kolb.

Reply to Queries.

Editor THE CLAY-WORKER:

To the question of Geo. &. Wm. Kolb enquiry, reading: Can you inform us of the dimensions of a square stack, inside measurements, also the height that it requires for three kilns which measure as follows, length 18 ft., width 16 ft., height 10 ft., use of 3 ft. for crown? Would reply:

No absolute minimum measurements have been established, but practical experiences have demonstrated the following rules and guides to be sufficient for all ordinary requirements.

Multiply the length, 18 feet, by the width, 16 feet,=288 square feet, the square root of which about 17 feet equals, reduce feet to inches and you have the width of a regulation size stack and flue for a kiln of above given floor space.

The height should be 17 inches to the spring, a semicircular arch 8½ inches radius (or ½ the width of the stack flue.) Or another example: Take a square kiln having floor space of 20 square=reduce square root of total floor space from feet to inches and you have a flue 20 inches square surmounted by a semi-circular arch of 20 inches diameter and 10 inches radius.

Or in the case of a round kiln as per inquiry of Hall & Sons: Take the radius in feet, say 30 feet, then the regulation flue would be 30 inches square surmounted by a semicircular arch of 30 inches diameter by 15 inches radius. These total figures will give sufficient stack area for good water smoking but possibly may have to be dampered considerably for economical burning of certain kinds of brick.

As to the height of stacks, the writer has always used the following rule with good, successful results. Say for instance the height of the kiln is 10 feet from the inside line of the crown at its highest point to the floor line, and it is, say, 2½ feet from the floor line to the base line of the stack flue=the total of these two measurements being 12½ feet x 2 will give the regulation height of the stack from the base line of the stack flue to the top of the stack. Or in the case of the round kiln 15 feet in height from the floor line to the highest inside point of the crown and four feet from the floor line to the base line of the stack flue, adding the two measurements together we have 19 multiplied by two will result in 38 feet, which is the height of the stack from its top to the bottom line of the stack flue. It should be borne in mind that the figures are all in a way relatively proportioned to each other and thereby govern each other. The writer is aware of plants where the stack power was very materially reduced by putting steeper crowns on kilns, and at another yard the stack power was materially enhanced by replacing high crowns by flat crowns in turn thereby practically raising the stack. J. J. Koch.

Gladding, McBean & Co.'s Main Plant Not Injured by the Earthquake.

Editor THE CLAY-WORKER:

Our San Francisco office and warehouse have been completely destroyed by the disastrous fire on the morning of April 18, 1906. For the present our main office will be at Lincoln, Cal. We shall endeavor to carry a well-assorted stock at Oakland, also at San Francisco, as soon as we can make the necessary arrangements to properly handle it. Our works at Lincoln, Cal., are intact and are now being operated to their fullest capacity, and with the extensive enlargements under way and in contemplation, we shall be able to execute promptly all future contracts or orders with which we may be favored. GLADDING, MCBEAN & CO.

Lincoln, Cal., April 30, 1906.

Another "Quake" Victim.

Publishers CLAY-WORKER:

You no doubt have heard from newspaper reports of the disaster which befell San Francisco on April 18th, and we regret to inform you that our store and stock in that city were completely destroyed. As no doubt many of the readers of your journal are customers of ours, and as we desire to reach the greatest number in as short a time as possible, we would appreciate very much if you would insert a short reading notice in your journal advising them of the above fact, and also advising them that, for the time being, all orders will be treated from Los Angeles, where we have ample stocks of apparatus and chemicals.

Also request them to please direct all correspondence to us at Los Angeles, and assure them that their inquiries and commands will receive our prompt attention. Thanking you in advance for this courtesy, we beg to remain

Yours truly,

Los Angeles, Cal. F. W. BRAUN CO.,

Observations of a "Quaker" Victim—Effects on the Buildings of 'Frisco as Noted by an Eyewitness.

Editor THE CLAY-WORKER:

You and my fellow readers of "the best clay magazine in the world" will be interested, I am sure, in a brief account of the effects of the recent earthquake here.

The only buildings which went through the fire successfully were the steel slow-burning construction buildings known here as class "A" buildings. Many steel-frame buildings of poorer construction not properly fireproofed failed to stand the fire. In some of these the walls are in a fair state of preservation, but the floors have dropped. For example, the old Chronicle Building looks all right from the outside, but all the floors lie in a tangle of steel beams at the bottom. Some other buildings are all right except for a sagging of the floors. An instance is the Aronson Building, on Mission street, which was in so good a state of preservation that the elevator was running in it within a week after the fire. But in some cases the floors have sagged as much as six inches owing to want of proper fireproofing of the steel work.

So far as has yet been ascertained, the really first-class buildings put up within the last ten years stood both earthquake and fire with no other damage than the burning out of the woodwork and glass. Buildings built in whole or in part of stone are more or less damaged in appearance by the heat. The granite Call Building, while otherwise but little injured, has scaled badly in places. There are many instances where stone buildings have scaled about those windows through which the flames poured from the interior.

A list of the class "A" buildings which appear to have stood the fire and earthquake with little or no injury to anything but glass and wood includes: The Fairmount Hotel, St. Francis Hotel, James Flood Building, Merchants' Exchange Building, Kohl Building, Call Building and New Chronicle Building. There are probably many others which will be saved in whole or in part, but those are the best known.

A great deal of undue prominence has been given to the damage done by the earthquake directly. As a matter of fact, even the old-style brick buildings as well as the more modern buildings and, of course, the wooden buildings were uninjured by the earthquake. The most notable earthquake damage was to the City Hall, Hall of Justice, and to a few churches, in all of which there was a pretense of much more substantial construction than was actually the case. The churches injured were stone-faced structures in which the stone was in no manner anchored to the framework of the steeple. A few old wooden buildings with more or less rotten foundations, were shifted or thrown down entirely. Another class of earthquake damage was upon the "made" ground (or filled-in places formerly occupied by creek beds or marshes), which was given an additional settling by the shock. But even in cases where the ground settled a number of feet, buildings with proper foundations, such as the United States Postoffice and the Union Ferry Building, were but little injured.

Few of the old-style brick buildings or of the modern second-class brick buildings, even where steel was used, were able to stand the fire.

The building laws of San Francisco did not permit concrete to be used in building, so no test of its value was made. The indications are, however, that the reinforced concrete floors stood the test fairly well.

My attention has just been called to the fact that stone arches suffered rather heavily from the earthquake, though this judgment may have been drawn from only a limited number of instances. M. G. R.

San Francisco, May 12, 1906.

Don't Favor the Middle Man.

Editor The Clay-Worker:

We enclose you our check for $2.00 for our Connersville plant. The outlook for 1906 looks bright. We run our local plant up to its capacity last year on both brick and tile; we constructed last spring a tile dryer, 100 x 50, four-story, being brick construction, heated by steam; dryer gives good satisfaction.

We have observed that some of our brother brick and tile makers in Indiana are placing their stock, or what they call their surplus stock, in the hands of brokers to put on the market. This is something new in this section, and in our estimation, poor business policy. What right has a broker, who has no money invested, who has not the cares or risks of manufacturers, what business has he to part of the profits? A broker called upon us and offered to market a certain number of cars per month, if we would make a discount of 25 per cent. from regular price. We would not listen to him. When the time comes that we are not able to manage our own sales, we are ready to quit business. This method should be stamped out while in its infancy, or conditions will be as disastrous with us in Indiana as it was in New York City, where the broker ruined the brick business. Now cut 25 per cent. off regular price, where are your profits? Respectfully yours,

Connersville, Ind. A. Fries & Sons.

The Clay-Worker a Means of Getting Acquainted with Fellow Craftsmen.

Editor The Clay-Worker:

Enclosed find $2.00 to apply on subscription to The Clay-Worker. We thoroughly appreciate your magazine. The many valuable articles contained therein can hardly be estimated by the dollar mark. The railroads charge us 3 cents per mile to carry us to neighboring plants, but you charge a flat rate of $2.00 and take us all over the United States and many foreign countries, taking us through different plants from start to finish, even going so far as to give us an idea of the disposition of the proprietor the same as if we had been there personally, so that if we ever have the pleasure we can say "we have met you before" through The Clay-Worker.

Wishing you future success as in the past.

Yours truly,

Winona, Minn. Frank D. Biesanz.

The Burning Question.

Editor The Clay-Worker:

Being a member of the N. B. M. A., and for several years a subscriber to your valuable paper, I have read in it a number of articles pertaining to brick burning, written by men far more intelligent and with a better command of the English language than I possess. After thinking the matter over very carefully and seriously, I have concluded to write you, just what, in my opinion, is the sum and substance, after all these years of reading upon this subject in your magazine, and it is expressed by just one word, "bosh," which means nonsense, error, mistaken, foolish and all the other words which imply that meaning, which the English language can express.

I am not looking for a better position, nor have I an axe to grind, but when I see men who have a fine education and unusual ability, putting their money into business and risking all on a good burn. The burner goes by experience, eye sight, shrinkage, former knowledge, and strictly temperate and perhaps a Sunday School superintendent, but it all resolves itself into one simple sentence, "can he burn good brick?" Now when I see what I think or believe to be a benefit to these gentlemen who are risking their all and perhaps, too, that of their friends, after about 40 years' experience in burning fireclay goods, and a little in common clay, it looks to me that I have come upon or discovered a simple method, whereby a man with ordinary intelligence can, by a little practice, tell just as well as any of these eye sight, shrinkage burners, of either terra cotta, common or fireclays.

I feel that I am doing a duty that I owe to mankind, when I tell how the proper heat is arrived at, at less than a possible cost of $1.00 for a half dozen kilns, and by putting the burning of kilns in the hands of intelligent, competent and educated men, where it belongs not in hap-hazzard, guess work or a puffed up fellow telling how smart he is and what he can do. I read articles on the "old gun shot" business, or how to control drafts, on clay mixtures, etc., etc., until I am all at sea, while the pure, simple method of firing a kiln or a firehole of a kiln, only as it draws, covers all errors.

First—When one or more parts of a kiln are finished, "chuck" some brick in the fire hole, so you can't fire only enough to hold these parts of the kiln.

Second—Begin early on the parts of the kiln which show hottest and slack fires.

Third—After throwing brick into fire holes, in the parts which are done, or bricking them up, keep on with the rest of the kiln until finished, serving each fire hole or set of holes as if separate kilns.

Now, how to tell when finished, gentlemen, the thing is so simple and costs less than 25 cents a kiln, and all this "bosh" is done away with. If there are any who are interested enough in this to write The Clay-Worker under the head of "Bosh," I will spread the idea in my next letter to The Clay-Worker. Then you will kick yourself because you never thought of it before. If not, do as Josh Billings wrote about, tickle the hind leg of a mule, it will let you know more.

No charge for anything; don't want any position, and no axe to grind, but I don't want to say anything if there are not enough to think it worth while to write a letter to The Clay-Worker. Very truly yours,

"Bosh."

Testing Kilns—Another View.

Editor The Clay-Worker:

The copy of the "Bosh" letter received and reading it, has put me in the anxious seat by the promised revelation of the great and perfect 25 cent remedy for telling when finishing heat in burning a kiln of brick has been attained. Give such a charitable and philanthropic gentleman all the space he wants for the promulgation of his simple cheap indicator. You ought to do it for the benefit of the readers and brick burners who have troubles, and it is to be believed there are quite a number of them. When a party makes a wonderful discovery, a simple method, whereby a man with ordinary intelligence can by a little practice tell just as well as the old style burners, when the proper heat has been arrived at and when finished, and when he is willing to part with his idea for nothing, such a man should be encouraged.

The world progresses and why should not brick burning be reduced to a simple practice by one that has had 40 years' practical experience. New inventions are made every day, and why not in brick burning. The field is open for improvement. The old saying, It is impossible, is dead. All one dare say now is, it is improbable; this means I am open to correction.

Just think of it, all the experimenting and testing such men as Seger, Brochoff, Zwick, Orton and others have done and have given the results to the publishers for the benefit of the clayworking fraternity. It is certainly to be deplored that "Bosh" is all at sea after reading such articles in The Clay-Worker. He is the exception, I am sure, for I know quite a number of craftsmen who have received large benefits from reading The Clay-Worker.

Some firms are willing to pay for a good thing, and when they cannot get what they want then they try experiments to find out what they wish to know, at times very costly ones, too. A series of experiments carried out by both practical and technical help, requires the using of a great deal of apparatus, such as draft meter for the stack, pressure meter for the kiln, pyrometer and Seger cones for the measurement of temperatures. Orsats apparatus for determination of flue gases, hygrometers for determining the amount of moisture in the air, barometers to tell air pressure, and thermometers to keep record of the temperature of the outside atmosphere, mud settling guages to keep track of the progressive settle.

By means of all these apparatus, it was proven conclusively to the experimenters, that brick burning was influenced by a great many constantly or intermittently varying conditions, so that one universal method, as far as known to those experimenters, could not be adapted to all burning conditions. Let us have, by all means, this new simple method, the writer is willing to try it, if it can be adapted to his kiln and would be very sorry if, after unprejudiced trial, he would have to say "Fudge."

The Problem of Country Roads.

Editor The Clay-Worker:

Down here in Kentucky they have been having trouble over the public road problem, and Br'er Watterson, of the Courier-Journal, recently stirred things up by turning the searchlight of publicity on some of the dark places in the system of equipping and maintaining public work. In this article it is pointed out that $710,568.47 has been expended by Jefferson County, Kentucky, since 1900, on public roads, and as a result the county has 245 miles of pike roads that are in no better condition today than they were in 1900, and a similar number of miles of dirt roads that are impassable two or three months during the year. A large part of the article is given over to the exposure of slack methods and careless and inefficient use of funds, matters which, while they are of no special interest, go to show that the same condition may exist in one form or another in various parts of the country and suggest that lots of money is being expended on roads that is practically thrown away, whereas if properly husbanded, the people might in time build good brick-paved roads and have something to show for their money.

One stretch of road, which is termed an "experiment station," a little more than a mile in length, is costing $5,000 annually to keep in repair, and only recently $6,000 was expended in the construction of half a mile of steel tracks, the idea being that these steel tracks for wagons would relieve the roads from excessive travel. The construction of the bitulithic section of road was planned, but the estimated cost on this was $15,000 a mile and was abandoned and some experiments made in sprinkling with oil. This, it is said, did some good, but the steel-track idea came along and took up the attention of the officials, so about half a mile of double steel track, four strips of steel about 6 inches in width were stretched along the middle of the road. It is said that this track is not used by one wagon out of twenty-five, and the disturbing of the macadam in order to lay the track really made the road worse than it was before.

The point for clayworkers to glean from this turning loose of a broadside by Br'er Watterson against the road-building methods of his section of the country is, that the time is ripe for an active campaign of education on the subject of brick-paved highways. People who have helped build and repair roads all their lives in the country districts are beginning to take notice of the fact that they have spent money and effort for years and years and have nothing much to show in return. This will naturally be followed by active inquiries on the part of more progressive people along the subject of how to get good roads, roads that will give them some returns for the cost of building and will not be calling for enormous repair bills year after year, bills which in themselves would in a few years build good roads. It is not to be expected that the whole country can be revolutionized in a year or two, and good paved roads made in all country districts, but in the thickly settled and prosperous territories surrounding the various cities a good start could be made if it is gone about in the right manner.

Take the case referred to in Kentucky, for example, and Jefferson County, the county which has expended so much for nothing, surrounds Louisville, the largest city of the State, and what they need to be experimenting with right now instead of steel and asphalt combinations is some good brick-paved roads leading out of Louisville. Cleveland has shown some good work of this kind, as we have all been told. Louisville has some good brick-paved streets, which should be followed by pavements leading out the main roads from the city. Moreover, what holds good there should also obtain throughout other States of the country, and all we need to get it is to show the people what has been done and what can be done with brick in making a roadway. C. O. L.

Brick News from Denver.

Editor The Clay-Worker:

While one would hardly say that Denver is having a "boom," yet every phase of the building industry is very active. The city is growing very fast in every respect. Hundreds of residences are being built and there are no frame buildings permitted within the principal parts of the city. The market for brick is very brisk. Besides the residences there is a good number of large buildings such as office buildings, department stores and hotels, most of which are from six to eight stories in height.

The Denver Pressed Brick Company has doubled its output and has orders ahead that will keep it busy for several months.

The Denver Sewer Pipe and Clay Company is increasing its plant so as to keep up with its orders for stiff-mud brick.

The Golden Pressed Brick Company, the Colfax Pressed Brick Company, the Fairview Brick Company, and E. E. Rowe & Co. all report business exceptionally good.

The sand-lime product is being used considerably in small structures where a cheap, light-colored brick is wanted, but can hardly be said to be in competition where a high-grade brick is desired.

The prices of common soft-mud brick are $6.50 and $7.50 per thousand, delivered. The prices of pressed brick are very low. No. 1 red pressed brick sell for $10 per thousand, and granite grays for $25 per thousand, at the yard.

There are many rumors of new plants going to be put up here, but the present prices of red pressed brick hardly warrant one in believing the reports, and as all of the clay for making the light-colored brick has to be shipped in from the foothills, the prices of those brick do not offer sufficient inducement to persuade the investment of the necessary capital. However, it is very likely that most of the plants now in operation will better their equipment in some way during the season. The plants making common brick are just beginning work for the summer. W. D. H.

Danger of Cement Blocks.

Editor The Clay-Worker:

Is the competition of cement blocks likely to prove dangerous to the brickmaker? Yes and no. It will be dangerous for the unprogressive, behind-the-times brickmaker, but the active, progressive manufacturer, who has studied his business and is making the best product possible from his material has nothing to fear. He will always be able to sell his product at a fair price. Just now he is able to sell it at a good price and this condition promises to last for a good while to come. In certain classes of construction the cement block will undoubtedly replace brick. This fact might as well be stated frankly. Nothing will be gained by denying it or in undertaking to disguise the fact. The cement block will replace brick in certain classes of cheap construction, where brick would be too expensive and where the builder desires to build cheaply and without regard to the qualities of beauty and durability. Really there is more to fear in reinforced concrete construction. For buildings destined to stand the vibration caused by heavy machinery there is a growing idea that concrete offers advantages superior to brick. It is contended that bricklayers of the present day are inefficient and that many brick buildings cannot stand the constant vibration of heavy machinery, consequently it has become necessary to seek some other material. Reinforced concrete offers a cheap substitute and one which has been steadily creeping into favor among constructors.

The brickmaker must overcome this tendency to ignore brick in the particular classes of buildings to which this applies, or, as some think would be more wise, abandon this field altogether, admitting that solid concrete may have superior advantages for construction where vibration is to be a factor, and concentrate efforts upon the many remaining classes of construction where vibration need not be considered and where brick is quite as cheap and infinitely better in every way.

Clay products are worth being manipulated in the most thorough manner and are also capable of being wrought into the most beautiful decorative forms. It is in this direction that the successes of the next few years are to be found. Make better brick and develop the beautiful designs which have been suggested by some clayworkers and the growth of the industry along more profitable lines will be assured.

T. C. J.

EDITORIAL NOTES AND CLIPPINGS.

The American Encaustic Tiling Co., of Zanesville, Ohio, has just completed an immense addition to its plant there, also the construction of several new kilns. This makes their capacity over forty kilns.

The Chicago Heights Brick Company has been organized with $100,000 capital stock, to manufacture brick at Chicago Heights, Ill., where a forty acre tract has been purchased. Work on the plant will begin at once and they hope to be ready for operation by the first of July. Frank Layer, 1327 Millard Ave., Chicago, is president of the concern.

The Eastern Townships Brick and Manufacturing Company has issued a letter which is addressed to "Our Friends, Everywhere," stating that they have moved their head office from the city of Sherbrooke, Quebec, to their yards at Webster Siding, where the latch string, which "in this case happens to be a poreclain door-knob," hangs out for all their friends. Their postoffice address will be Lennoxville, about three miles from Sherbrooke, and if anyone wishing to visit their plant will telephone them from Lennoxville, they will meet them at that place and take them out to the plant and show them over same, the only condition being that they be allowed to "talk brick" to their heart's content.

POPULARITY OF THE "HERCULES" CEMENT-STONE MACHINE

A report from Rochester states that the Century Cement Machine Company, maker of the Hercules Cement Stone Machine, is increasing its facilities as rapidly as possible to keep up with the rapidly increasing demand for the Hercules machine.

Besides doing a large domestic business, this concern is receiving many orders from foreign countries. Last week four machines were shipped to Ireland, the third order from a contractor who has been using the Hercules for over two years.

The manufacturers of the Hercules have had several years of experience, being among the first to turn out a good cement stone machine, and this experience is shown to good purpose in the 1906 Model Hercules, a machine that seems as perfect in construction as it is possible to make it.

The Hercules is a very simply constructed machine built without chains, cogs, bolts or springs. It is so arranged that two stones of the same size or design or of different sizes and designs can be made on the one machine at the same time.

On the Hercules, blocks and also all kinds of ornamental work, columns, cornices, etc., from two inches to six feet, can be made rapidly and perfectly.

Many residences, apartment houses, factories, business blocks and churches are now being built of concrete, made on the Hercules, and the Century Cement Machine Company is anticipating a large demand for machines during the summer months.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-THIRD YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
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Six copies, " "	10.00
Ten copies, " "	15.00

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☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

227-233 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

VOL. XLV. MAY, 1906. No. 5.

CURRENT COMMENT.

Sometimes the economical production of steam depends considerably on the skill of the fireman.

* * *

From the looks of things, it appears as if grafting is a handicap to merit in placing some municipal contracts.

* * *

The man with the hoe that rakes in the dough these days is he who digs in the mortar box, and even he is outdone by the man with the trowel.

* * *

No matter just what the outcome may be, it is a foregone conclusion that somebody is going to be dissatisfied with the railway rate measure.

* * *

When a man gets to thinking he don't need any help or advice to make his way in this world, and is fully competent to do it all alone and unassisted, he is in a fair way to get lost in the wilderness of ignorance.

* * *

There is nothing that costs less nor pays better returns than courtesy when extended to your fellow men, and this holds good even though you do waste a lot of it on some who have a large element of hog in their makeup.

* * *

Structural lumber scored a further advance in price with the new year, and in connection with the general prosperity of the agricultural world has materially enlarged the scope of opportunities for pushing clay products for home building.

* * *

With all his strenuous stunts, his late message to Congress shows that the President is not the least bit wind broken. But then what he has had to say will be nothing in point of longwindedness to what the congressional record will show by the time the present session of Congress is over. That, however, is not saying that this won't be more to the point, and more worth while generally.

* * *

If the investigation fad keeps up much longer it will soon be an actual disgrace to be known as a grafter. And, when that time comes, and they all get found out, it will include quite a string of people who heretofore have been considered quite prominent and important.

* * *

We are going on into the new year with the greatest load of prosperity ever carried by the American people, and the best thing about it is, that the load is pretty generally distributed, so that we may be spoiled a little but will hardly break down under it during the present year.

* * *

Have you noticed that in all the discussion and contention over building laws and restrictions that there is very seldom a complaint from brick manufacturers on matters of stringency, for usually the more stringent the laws become the better it is for the manufacturers of clay products. The inference is plain, needs no elaboration, and points clearly to the superior quality of brick and other clay products as building material.

* * *

We used to be taught that in union there is strength, but if some of our labor unions don't amend their tactics, the new definition will be, "In union there is trouble." Let us look at things in a broader light and re-establish the word in its true meaning, and when we get together, no matter whether we are laborers or employers of labor, let it be to promote not only the strength but also the peace, good will and usefulness of all.

* * *

What has become of the fellows that used to argue that labor-saving machinery meant the turning of good men out of work, and a cause of suffering among laboring classes? Who ever saw more labor-saving machinery than is in use at the present time, and when was there ever a time that the demand for skilled labor was better? You hear the call for help from every side and from almost every industry, and not only from those employing skilled help, but also for what is termed common labor.

THE PAVING QUESTION IN THE EAST.

We are advised that there is a growing dissatisfaction with the paving that has been done and is being done generally in the principal Eastern cities. Asphalt has been tried and found wanting and yet the influence of the asphalt companies is sufficiently powerful to force that material on communities where a majority of the taxpayers interested are opposed to it. For some years past New York has been using wood block pavements quite extensively. This sort of pavement, where the blocks are treated with creosote or other preservatives, makes a very good pavement for light traffic streets for a year or two, but no chemical treatment can make a wood block a durable paving material, and so in the long run this character of pavement must prove an expensive luxury, the burden of which falls heavy on the taxpayer, and when he finds that here is a paving material which is both less expensive and much more durable than either asphalt or wood block that material will be in demand, despite the influence of "combines," no matter how powerful. The National Association of Paving Brick Manufacturers ought to direct its attention in part to the Eastern cities. The Eastern municipal officers need to be enlightened on the merits of modern brick pavements. When they are made aware of the fact that a properly laid brick street is just as smooth as asphalt or wood block; that when laid with a good sand cushion it is no noisier than either one or the other; that in point of durability it is far the best, and that its sanitary qualities are superior, there will be a much greater demand for brick pavements. In fact, some of the Eastern cities, for example, Newark, N. J., are now laying more brick than any other kind of paving, and when the economy of these streets is demonstrated it will not be long before other cities will follow Newark's example and city fathers will be compelled to pave with brick. It is a matter of education. Let the people know the merits of brick streets, their superior sanitary and lasting qualities, and there will be a boom in the paving-brick business of a permanent character.

GOVERNMENT INVESTIGATION OF STRUCTURAL MATERIALS.

The Government is proposing to co-operate with the architectural and engineering world in the study of structural material. This is not a bad move and much good can be done by the right exercise of this combined effort, but this of itself only constitutes half of the task, for to make their efforts of the fullest benefit there yet remains the task of enlightening a self-opinionated people until they will see things as they ought to see them and make good use of the information furnished. In other words, it is not only a problem of leading the horse to water, but to complete the job by also finding out how to make him drink.

TROUBLE FOR THE HUDSON RIVER BRICKMAKERS.

The possibility of a strike on the Hudson River yards, which we mentioned last month, has become a reality. May 16th a general strike was ordered by Charles Hanks, president of the International Brick, Tile and Terra Cotta Workers' Alliance. It is claimed that 3,000 men "went out" and will remain "out" until their demands have been granted. They demand increased wages and recognition of the union. The latter is likely to be the stumbling-block which will prevent an amicable settlement. The manufacturers are willing to concede a reasonable increase in wages, but insist upon their right to operate "open" yards without interference from walking delegates or other representatives of the union. At this writing, May 19th, the whole Hudson River brickmaking district is affected. Serious trouble has already begun, the State militia has been called out, and the situation is very serious, with no prospect of settlement in sight.

STEEL STRUCTURES THE BEST "QUAKE" RESISTERS.

The earthquake and fire at San Francisco, like other great disasters, brings with it some lessons, the full significance of which is being realized as the ruins are being cleared away and plans are made to rebuild. One of these of prime interest to the structural world is that the steel-frame building, even though it may be a skyscraper, will stand shocks and similar disturbances much better than wood-frame buildings. In other words, tall steel buildings of the skyscraper class apparently stood the earthquake better than wood-frame buildings of two, three, four and five stories in height. Another point brought out, and one that becomes more prominent as the work progresses, is the necessity and importance of fireproofing. It was the fire that did the greatest damage of all, and the account of the heroic efforts to check the fire, as well as the devastation wrought before it was checked, are still fresh in the minds of our readers, so it should not require any lengthy argument to point out the great importance of guarding against fire not only as a community but in individual building. Steel frames that stood the earthquake where they were not protected from the fire were warped and buckled by the heat, and many of those which stood the earthquake shock were ruined simply for lack of fireproofing. Where buildings were fireproof throughout no damage was done by the fire except that which can be readily repaired. In this instance, however, as in the great Baltimore fire, when the real test came it found very few houses which were actually fireproof, which fact should serve to wake us up to the subject of fireproofing, and to thoroughly impress us with the fact that only the best is good enough, and when we come to thinking about and talking about the best, that means clay products.

ESTABLISHING TILE FACTORIES.

We have a friend who resides in the State of Georgia, and others in other States who write us as to the cost and advisability of establishing small tile factories. It is not easy to answer these inquiries so as not to mislead, for several reasons. We have little knowledge as to the probable future demand for drain tile in the sections of country from which these inquiries come. There may be a need for drain tile in a particular locality where the party wishes to erect a factory, but do the people know that they need the tile; do they know as to the benefits of tile drainage, and will the people buy the tile after they are made.

There are sections of country where tile drainage, if well done, would double the value of every acre well drained, but they will not support a tile factory because they do not know enough about the benefits of tile drainage to induce them to buy tile, and they are so set in their ways that they will not learn otherwise.

People who use drain tile are, almost without exception, enterprising people. A friend of the writer some years ago erected a factory in a county in this State (Indiana) where much of the farming land needs draining badly. The soil is mostly a cold, retentive clay, some of it is called sour land; there are hundreds of farms in the county that barely afford a living for the owners. They are stuck in the mud much of the year, land cold, clammy, heavy and grows poor crops, yet they will not buy drain tile. He invested four or five thousand dollars in a tile factory and then undertook the education of the people to the use of drain tile, but they would not be educated. Now and then one would buy a few rod of tile, but only a few. He shipped tile to other sections of country but the freight rates made it an up hill business. He spent ten years of the best of his life trying to build up a trade with the people but it was not possible. The people were not made of the right kind of clay, some way. We know of other sections where if one goes to them and talks of the benefits of tile drainage they will have a far away look. It is not worth while to waste breath on them. But fortunately all people are not alike. There are sections of the country where a good tile factory would do well, would build up a good business. One important factor in the manufacture of drain tile is a good quality of clay. The clay should be uniform in texture, free from stones, especially lime pebbles. It should be soft and pliant to the touch, and when well worked, plastic. While it is true that many kinds of clay will make drain tile if well worked and properly tempered, yet to be successful in the business the clay should be well adapted to the use intended. If the clay after being worked will dry without cracking it is a good indication; clay that will make drain tile will also make brick, but all brick clay will not necessarily make drain tile.

Twenty years ago the manufacture of drain tile required only a few hundred dollars outlay to begin the business. The machinery was crude, and horses or mules furnished the power. So it is not necessary that one should have a bank behind him to begin the business, but some have found it very convenient to have banks to back them where they manufacture drain tile on a large scale.

Where the demand will take the tile at fair prices as soon as made, the business may be made self-sustaining from the beginning. As to the power required, steam power is generally used.

A machine adapted to the business may be purchased from some of the well-known tile and brick machinery, manufacturers advertising in our columns. If it is intended to invest but little money in the plant to begin, a second hand machine could probably be had at a low price by inserting a "want ad" in THE CLAY-WORKER.

Something New in Brick Kilns.

Under the above caption, the Richardson-Lovejoy Engineering Company, Columbus, Ohio, has issued an interesting booklet illustrating and describing the Richardson-Lovejoy down-draft semi-continuous kiln for two-side firing. This type of kiln, it is claimed, will save from 50 to 75 per cent. of the fuel used in the ordinary manner of burning brick. Those of our readers who are interested are requested to write to the above firm for a copy, mentioning THE CLAY-WORKER.

Tube Mill Mixer for Sand-Lime Brick.

The Abbe Engineering Company, New York, whose ad appears on page 712 of this issue, now offer the trade an improved tube mill mixer which is being used with great success by a number of sand-lime brick manufacturers, who claim that it has solved one of the most difficult problems connected with the sand-lime brick business. The apparatus will be fully described and illustrated in the next number of THE CLAY-WORKER. In the meantime, if any of our readers are having trouble with their grinding and mixing machinery, they will do well to send to the Abbe Engineering Company, 220 Broadway, New York City, for their booklet on tube mill grinders and mixers.

A Hurry Order for Brick Machinery.

The local press of Anderson, Ind., is authority for the statement that Mr. Fred R. Bachelor, of San Francisco, a brick manufacturer whose plant was destroyed recently, made a flying trip East and gave the Anderson Foundry & Machine Works an order for a complete brickmaking plant which will cost all told $150,000. Mr. Bachelor is credited with saying that he would have been glad to have had the entire shipment forwarded by express, if that could have been done immediately.

The Grath Hand-Power Press for Sand-Lime Brick.

Walter P. Grath, of the Illinois Supply and Construction Company, St. Louis, Mo., is much gratified over the fact that his special hand-power press is proving to be all that he has claimed for it. This is evidenced by the fact that the Grath press has been successful in every instance, and is especially adapted to the manufacture of sand-lime brick. Mr. W. K. Squier, of the Paragon Plaster Company, Syracuse, N. Y., who is president of the National Sand-Lime Brick Manufacturing Association, is using one of these presses with the best of satisfaction. Mr. H. O. Duerr, manager of the Diamond Stone Brick Company, Wilmington, Del., who is the secretary of the National Sand-Lime Brick Manufacturing Association, is using two of these presses with the greatest of satisfaction. Prof. E. W. Lazell, vice-president of the Henry Spackman Engineering Company, Philadelphia, Pa., and who is also the special chemist and who has charge of the testing laboratory for the Sand-Lime Brick Manufacturing Association, also ordered one of these presses for making sand-lime brick. Other late sales are the Peerless Brick Company, of New York; P. Anderson & Co., Edmonton, Canada; Quintera Mining Company, Sonora, Mexico. The latter company will use same for making ore briquetts. The Illinois Supply and Construction Company is now building a new 1-mold steam-power press especially designed for making 5,000 to 6,000 perfect sand-lime brick per day. Each and every brick will be guaranteed to be a perfect brick when it leaves the press. This press is simple in construction, but very powerful in action, and will be guaranteed in every way and to make a brick superior to those made on any other press and that every brick will be a perfect brick.

EDITORIAL NOTES AND CLIPPINGS.

The Illinois State Federation of Labor has sanctioned the use of prison-made brick which under the statutes must hereafter be used on all state buildings. This averts a serious labor trouble threatened when it was announced that prison-made brick would be used in the new dairy building on the state fair grounds at Springfield.

The capital stock of the Hocking Valley Fire Clay Company, of Nelsonville, Ohio, has been increased from $10,000 to $75,000 for the purpose of erecting an immense plant at Nelsonville for the manufacture of clay products. The erection of the plant will be under the personal supervision of A. M. Magoon, of Logan, who will be vice-president of the company.

Captain John N. Porter, who has been identified with the brick manufacturing business in the upper Ohio valley for forty years, has purchased the property of the Kenilworth (Pa.) Fire Brick Company, controlled by Park Brothers, of Rochester, Pa. This plant was destroyed by fire two years ago. Captain Porter will rebuild the works, but on a larger scale.

Advices from Sharon, Pa., are to the effect that appraisers are at work on the fire brick plants in that vicinity with a view of uniting them all under one management. It is contemplated to merge every independent fire brick manufactory in the United States. The companies to be included in the new combination are the Joseph Sisson Fire Brick Company, of Connellsville; the Savage Fire Brick Company, of Johnstown; the Hyndman, the Williams, the Keystone, and the Reese-Hammond Fire Brick Company. The new company will be independent of the Harbison Refactories Company, but will act with it in maintaining prices.

It is reported that a market for brickmaking machinery has suddenly developed in South Australia. What is said to be unlimited quantities of clay suitable for brick have been discovered and it is now proposed to import the machinery and make the brick rather than to import the brick as heretofore. Millions of brick have been imported heretofore. France will suffer a loss of trade in flooring and roofing tiles, which can be made from the newly discovered clays. The pottery business will also be developed as rapidly as possible. This will be assisted materially by the tariff, which imposes a duty of 20 per cent. on all imported pottery.

The Century Cement Machine Company, of Rochester, N. Y., has within the past month shipped to foreign countries twenty-two Hercules cement-stone machines. Eight of these machines were shipped to Ireland; one to England; one to Chili; four to Porto Rico; four to Cuba; two to Buenos Ayres, and two to Australia. The same company has also secured orders for a number of machines, which are to be used in making cement blocks for the building of the new electric power-house of the New York, New Haven & Hartford Railroad at Cos Cob, Conn. In the construction of this magnificent building, blocks made on the Hercules cement-stone machine will be used exclusively.

THE GOD OF CLAY.

I watch each day my singing sisters go
Lightfooted to the temple on the height,
Bearing fair gifts, trailed blooms of rose and snow,
To please the golden gods of their delight;

The golden gods that, in their lofty place,
Stand in their flawless might for all to see,
Bearing each one upon his perfect face
The pride of his infallibility.

And ever on their way and singing thus
They pause sometimes to urge me to deride.
"O sister, wilt thou never come with us
To worship where the gods of gold abide?"

They never know that, ere they pass the gates
Of bronze and ivory, I take my way
To where, in his unlighted darkness, waits
My desecrated, shattered god of clay.

Before their golden gods my sisters cast
Their fleeting blooms, the gladness of their years;
I bear to my degraded god this last
Great gift of silence and of awful tears.

—Theodosia Garrison.

MY PERSIAN PRAYER RUG.

ANNA REEVES ALDRICH.

Made smooth some centuries ago,
By praying Eastern devotees,
Blurred by their dusty naked feet.
In Ispahan,
It lies upon my modern floor,
But no one prays there any more.
It never felt the worldly tread
Of smart bottines, high-heeled and red,
In Ispahan.

But no one prays there now? I said;
Ah, well, that was a hasty word.
Once with my face upon its woof,
A fiercer prayer it never heard,
In Ispahan.
But still I live, who prayed that night
That death might come ere came the light.
Did any soul in bleak despair
Breathe here that reckless prayer,
In Ispahan?

Perhaps. I trust that heaven lent
A kinder ear to him than me,
If some brown sufferer, weeping, begged
To have his wretched soul set free,
In Ispahan.
I fancy I shall like to meet
The dead who prayed here, and whose feet
Wore this rich carpet dim and frayed.
Peace to your souls, the friends who prayed
In Ispahan.

MISS MAY.

Who's det cummin' f'um de Souf?
Mis' May, wid all her fleetness;
Spillin' honey f'um her mouf,
Breathin' out her sweetness.
Ridin' on a Dixie breeze,
In a sea ob blossoms;
Fillin' up de hollow trees
Wid baby coons en possums.
Hurray!
Mis' May!
Yo's safe, Br'er Possum, en yo's safe, Br'er Coon,
'Till Jac' Fros' cums wid de harvest moon.

Mis' May am heah befo' sunrise
En sech a busy lady;
She has to paint de buttehflies
En mek de meddehs shady.
En teach de baby bunds a tune
En bramble en in thicket;
En open up det round coocoon
To let out baby cricket.
Hurray!
Mis' May!

Yo' bring de sweetness when yo' cum
En staht de hummin'-bees to hum.

—Victor Herman.

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IF YOU KNEW the advantages of controlling the draft in burning brick, you would not be without a draft gage. We have draft gages for down-draft and for continuous kilns. The Obel gage is self-registering and shows the exact time of every firing.

THE RICHARDSON-LOVEJOY ENGINEERING CO.

(See page 798.)

WANTED, FOR SALE, ETC.

WANTED—Position as manager or superintendent of high grade face brick plant; dry press or soft mud. Excellent references as to ability, etc. Address S. M. S.,
5 1 1p Care Clay-Worker.

FOR SALE.

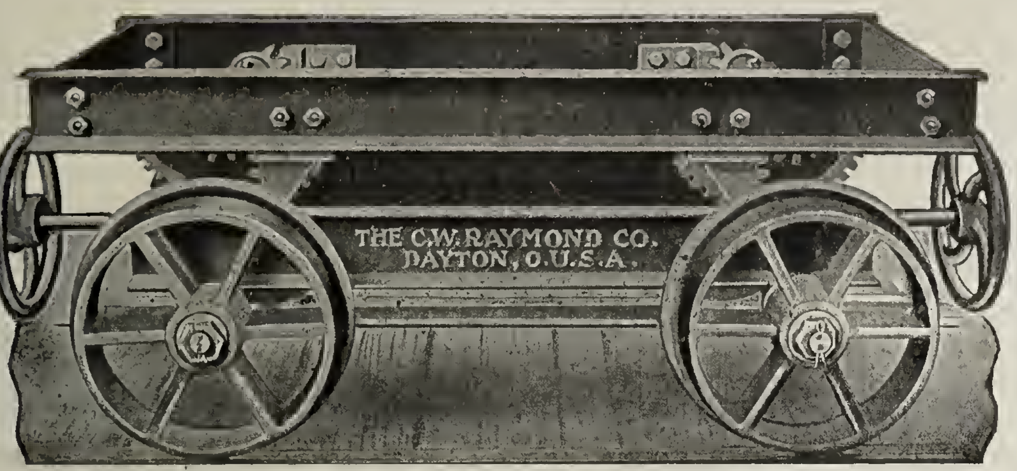
One of the best brick plants in Eastern Indiana. Plenty of clay, good market, and in a city of 35,000 population. For full particulars address
P. O. BOX 274,
4 3 c Muncie, Ind.

WANTED—Position as superintendent of brick plant. Dry press, soft mud, or stiff mud. Understand all kinds of kilns, driers and machinery, or can remodel or build plant, from testing clays to building kilns. Address, N. C.,
5 1 dm Care Clay-Worker

For Sale, Wanted, Etc., Ads Continued on Pages 780, 781 and 782.

The Raymond System of Open-Air Drying.

Much the Cheapest Drying System Known.


THE C.W. RAYMOND CO.
DAYTON, O.U.S.A.

The McKenzie Patent Elevating and Lowering Brick Car.

The McKenzie Patent Elevating Car is so constructed that it operates positively and without perceptible jar. It can be run in either direction or operated from either end. The car is built a standard 24″ gauge, and can be adapted to existing methods. The car is built with a view to withstand the rigorous duty required of it. Entirely of iron and steel, and well proportioned. Exhibit 63 explains in detail.

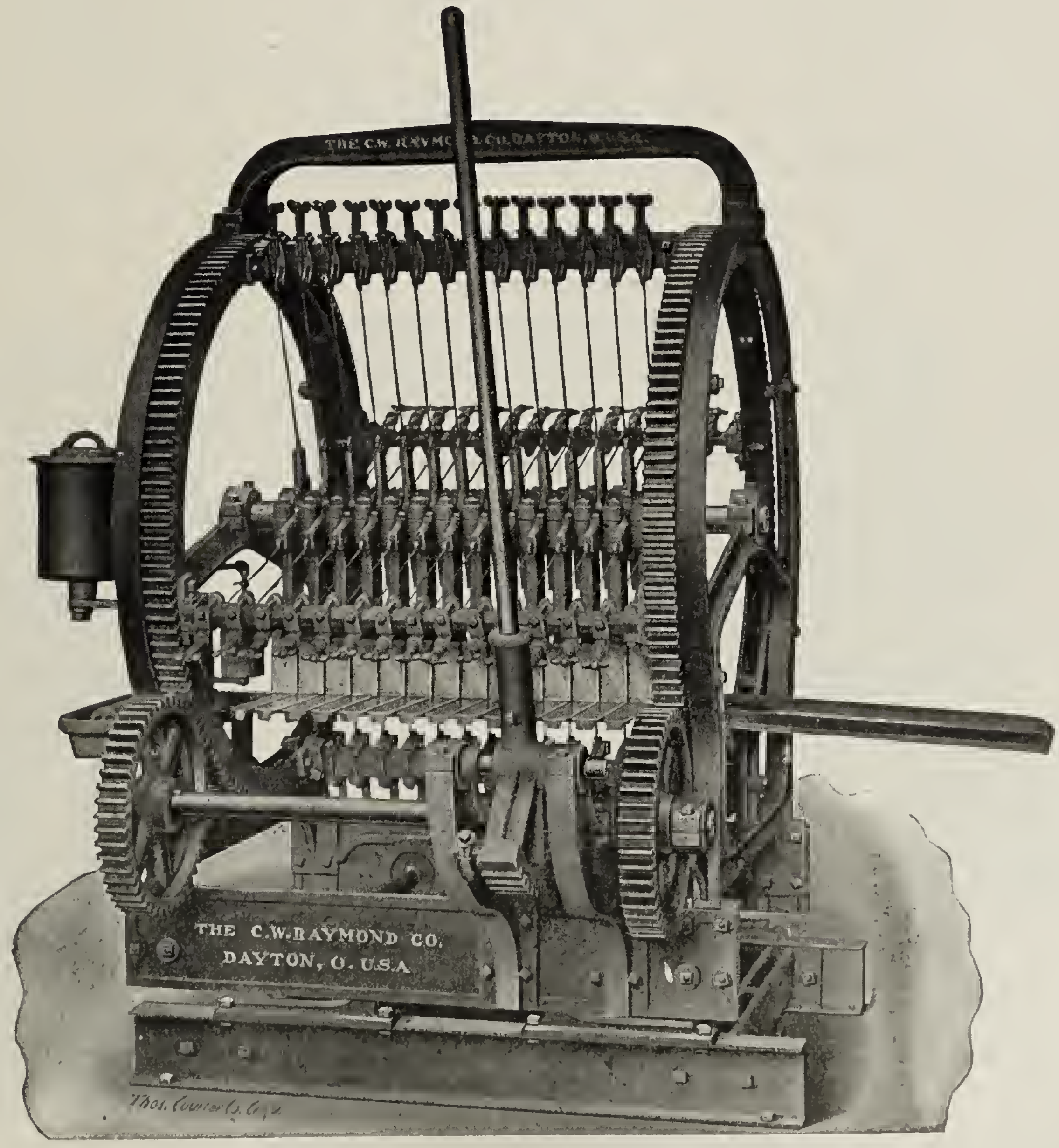
The C. W. RAYMOND COMPANY,

DAYTON, OHIO, U. S. A.

THE UNIVERSAL.

Fills the demand for cutting a high grade face brick. A shear down cut is given to the brick and all brick are cut positively true to line. The cutting wires are guided by the platten entirely through the column of clay. The rotary motion is in one direction, and the capacity limited only by the skill of the operator. The most practical cutter made.

We manufacture everything required for the brick plant.


THE C.W. RAYMOND CO. DAYTON, U.S.A.
THE C.W. RAYMOND CO.
DAYTON, O. U.S.A.

RAYMOND UNIVERSAL HAND CUTTER.

Written for THE CLAY WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.

EVERYONE IN THE brick business in this section of the country seems to be busy at this time, and there is a fine prospect for business ahead. Building operations are getting under full swing and there are apparently going to be more buildings erected and some of them of greater value than ever before in any one year. The only cloud in the horizon is labor troubles, and, as the Employers' Association has been able to cope with that trouble in the past without stopping building operations, it is expected they will do the same this year.

According to the report of the superintendent of buildings, there were fewer permits issued last month than for April of 1905, there being 490 permits, against 511. The total value of the buildings for which permits were issued, however, amounted to $1,424,740 last month, while the total value for April of last year was $992,865, showing an increase of $431,875. Of the permits for last month forty-nine were for brick buildings, the value being $757,100.

The building permits issued in the last fiscal year, ending April 16, amounted to only about $1,000,000 more than for the previous fiscal year. The actual figures are $10,472,039, as compared with $9,542,767.

There is quite a building boom on in Kansas City, Kan., and, while the majority of these buildings are frame cottages, there is also a good proportion of brick buildings, but almost entirely residences. It is claimed that six hundred dwellings are now under course of construction over there, and that the building permits this year are running over double what they did last year.

There is prospect of labor troubles here about June 1. The carpenters are demanding an increase in wages at that time, as are also the painters and the plasterers. Then there is a clash here in the ranks of the stonemasons, a new organization having been formed, and contractors have been notified that no stonemasons not belonging to the new union will be allowed to work on buildings contracted after April 15. There is no fight over wages in this case, but merely between unions, as the wages are the same, and it is merely another case of leaving the contractors to suffer the result, no matter which way he moves, in case he decides not to sit still and hold his hands and let others manage his business for him.

It is not known what action the Employers' Association will take in these matters, but it is safe to say that they will be on the ground with their eyes open, and, judging from what they have done in the past, it is pretty safe to expect them to manage the thing right to help the contractors to keep moving. Since the organization of this association this city has gained an enviable reputation for lack of labor troubles, there having been no strikes won, and the strike fever having been considerably subdued in consequence. Prior to that time strikes were quite common, and it was a very ordinary thing for some man who had taken a striker's place to have his head broken, and the police department never saw anything happen. Now things are changed, and the Employers' Association, being an organized bunch of influential men, they are able to command the respect and attention of the police force, and not have one-sided action on account of all the weight of organization being on one side.

The builders of the finer residences in Kansas City are beginning to take notice of the value of vitrified brick for a face brick. Architects are not slow to call their attention to the fact that a vitrified face brick can be washed off with the garden hose and will not become dingy and black on account of the soot and require a coat of paint nearly as often as a wood house, if appearances count for anything. The vitrified bricks are coming to us now in all colors, so there is no reason why any other kind should be used in facing a house, and it would appear that the time is not far distant when they will be used exclusively for that purpose. The fact that the price of a good many different kinds of pressed brick for facing purposes has been reduced would indicate that the sale is not as good as was formerly the case, and, on the other hand, there is a great demand for vitrified face brick. The demand for common brick is also very strong and the price has advanced all the way from 50 cents to $1 per thousand. About the same advance has been made on vitrified face brick, and about the same decline is recorded on a number of different kinds of pressed brick.

The Pittsburg Brick Company reports having just landed the contract for 1,400,000 of their paving blocks for Paris, Texas, and this leaves the Pittsburg plant with its output ahead in a very comfortable shape. Judging from the way this company has been landing orders for paving bricks this year, the cities in the South have decided to get in their orders early enough so they can get their paving down before the winter weather catches them. This is in marked contrast to their actions last year, and they evidently learned a lesson from past experience.

The Lawrence Brick Company is reported to have just started up for this year, having equipped its plant for oil, and will not now be handicapped by coal strikes.

J. H. Looney is organizing a brick company in Kansas City and will have one of the best locations for a plant, with an inexhaustible bed of shale. He formerly had a plant in La Harpe, Kan., and will use the machinery in the Kansas City plant.

The brick plants in this section of the country which depend on coal as a fuel have generally been getting just about enough coal to keep them running, but are not able to see any surplus in sight to make them feel easy over the situation.

The St. Joe Pressed Brick Company, of St. Joseph, Mo., is running again, getting its supply of coal from the Iowa mines, where the miners are at work.

The Pittsburg Brick Company reports having sold their fine vitrified paving blocks to Alfred Toll, president of the Badger Lumber Company, of this city, to be used by him in building a fine residence he is just erecting in the south part of the city. He wanted something both different and better than the regular offerings and feels that he has found it.

The Eadie Building Supply Company has landed the agency for the Logan Brick Manufacturing Company, of Logan, Ohio, manufacturers of vitrified face brick, in golden bronze, old gold, mottled grey and other colors. Their plants are immense, their annual output being 70,000,000. They also now have the agency for the Acme Brick Company, of Cayuga, Ind., manufacturers of impervious face brick, and Mr. Eadie says that he finds architects in this section of the country are generally specifying impervious or vitrified face brick.

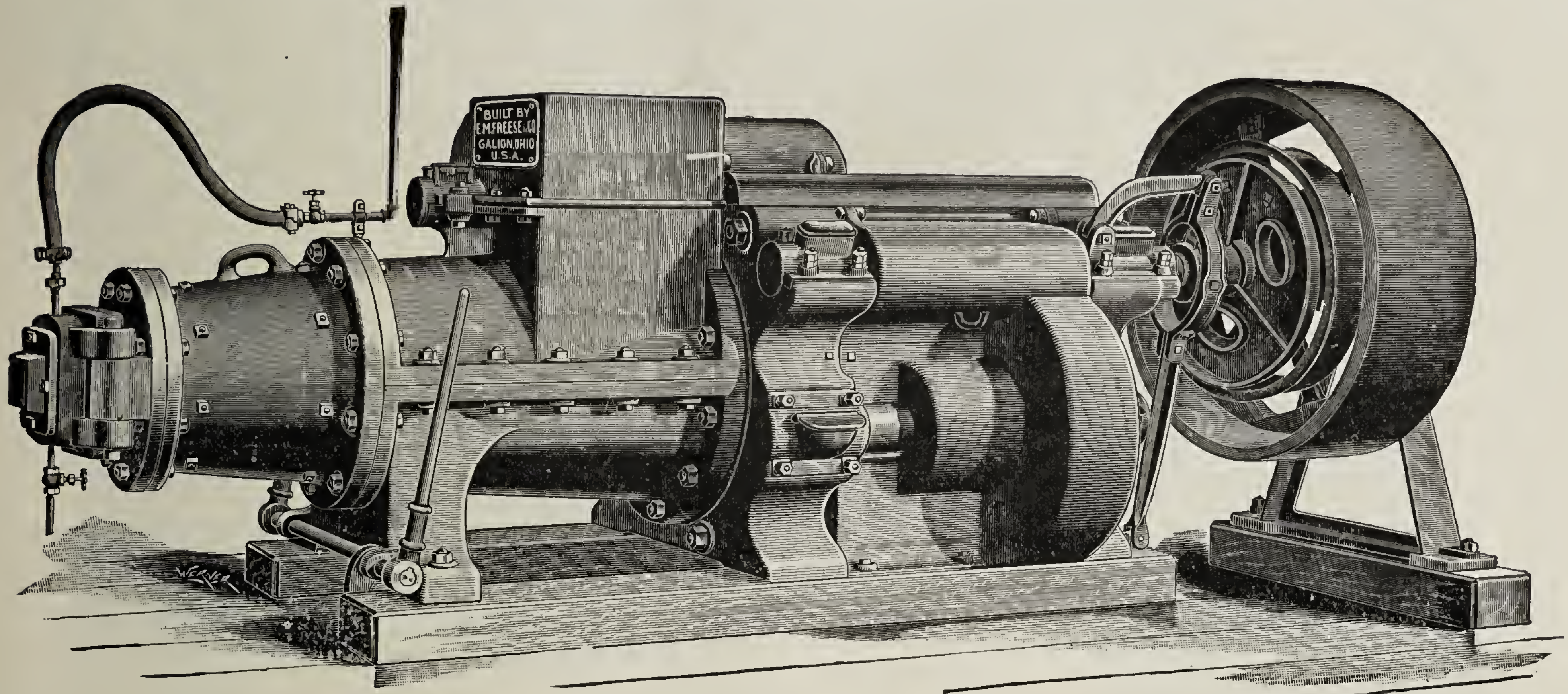
K. A. W.

IN INDIANA.

"G'wan wid yez! De missus ain't in."

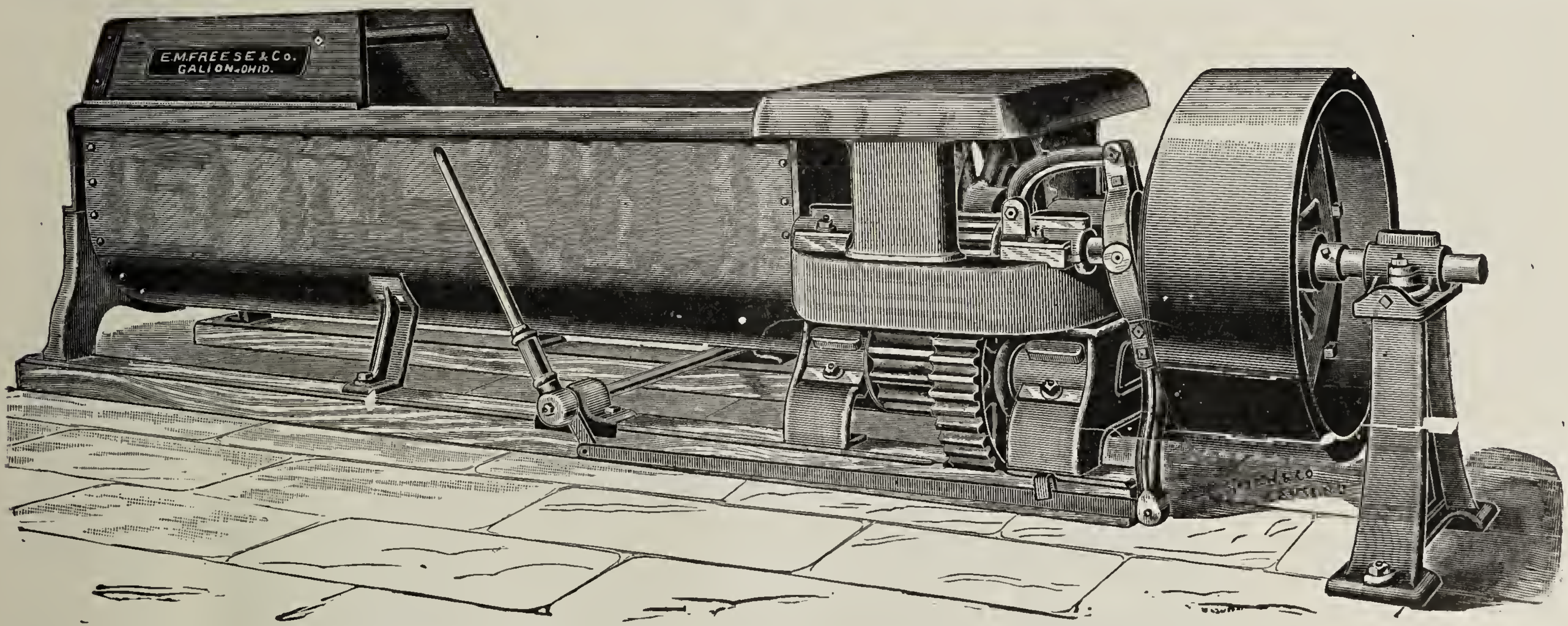
Note—Recent reports show Indiana has a greater decrease in birth rate than any State except Oregon.—Indianapolis Star.

Our Mammoth Brick Machine



THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION-OHIO.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitetd for making a fine quality of brick.

E. M. FREESE & CO., - - Galion, Ohio.

See Ads on Pages 820 and 821.

Written for The Clay-Worker.

NEW YORK AND THE EAST.

SPRING HAS REALLY OPENED all through the East, and all brick yards are beginning to get ready for the rush which the season is certain to bring them. The supply of brick held in storage in and near the big centers is lighter than it has been for years at this season and this will naturally increase the demand for brick direct from the yards. To meet this demand makers are hurrying to get their yards ready for service as quickly as possible. All about New York there is bustle and hurry and business promises to keep it that way indefinitely. Sales have already been made at higher prices than ordinarily at this season. Some think there will be a further advance as soon as demand actually begins, but others are confident that the sales which have already been made represent the high-water mark. Of course it is impossible to say which is correct, but when it is remembered that none of the yards will be in position to deliver any considerable quantities before the last of May it is difficult to understand how prices can go much lower. Hudson River common are quoted in the New York market at $10.50 a thousand, with a slight reduction for pale grades and with selections rather higher. Business has been done even higher than these figures on small lots, but they have not been of sufficient size to disturb the market any. Fire brick are in strong demand and range up to $35. Other grades sell at whatever holders can get. The market is in good condition now, however, and there is nothing to indicate any change for the present, unless labor troubles interfere.

Beginning on the Hackensack River, a trip through the various yards discloses the fact that there are comparatively few brick left. Only one or two yards along the Hackensack have any at all and it is understood that those are already sold on contract. It is difficult to get at the exact facts in these instances, but there are evidences which almost prove conclusively that this view of the matter is correct. Assuming that everything left over from last season is held on contract for delivery this spring, it follows that this season's buyers will be obliged to wait for the first deliveries from this year's burnings before they can have the brick they want. It is, perhaps, a desirable position to be in and makes the makers absolute masters of the situation.

The prosperity along the Hackensack last year has caused a considerable sum of money to be used in repairs and replacements. Several of the firms have done considerable changing about and one, M. and M. L. Gardner, has enlarged their kiln sheds by nearly one-half. Repairs on machinery, enlargements of yards and stripping of new clay deposits are some of the indications of what is expected in the future months. All the yards are busy now. There are a good many men at work clearing up and re-arranging the yards, and nearly all have started the pumps in the clay pits which filled with water during the winter. The Hackensack makers are seriously handicapped by working far below the surface of the river, which renders it impossible to keep the water out. Pumps must be run all the time. In winter they allow the pits to fill and utilize them as ice ponds; but few of them are not bothered in this way and it adds measurably to the expense of brickmaking.

The Hackensack makers are also handicapped, in a way, by being unable to get their bricks out, excepting by water. That is to say, the lower yards cannot be reached by rail and scarcely by trucks. The brick are ferried across the river and loaded upon cars and thence transported wherever required, or go out by water. As soon as the river freezes the shipment of finished brick must cease. The Hudson River yards are served by water in summer and by the West Shore Railroad in winter. They can ship at all seasons, and, therefore, possess some advantage over their confreres on the Hackensack. During the dull times previous to 1904 there was talk of abandoning the yards along the Hackensack for something where shipments could be made at all seasons, but since business revived there has been nothing further said and with two exceptions there are no inland plants in that part of New Jersey.

The Hudson River manufacturers are hurrying their preparations and in some manner their shipments also. There are many schooners making early spring deliveries and shipments by rail are also numerous. The building operations in and about New York continued almost throughout the winter and the demand for brick in the season just passed was unprecedented. The continuation of larger demand than common through the winter kept the storage yards in the city pretty well cleared and they opened the season with relatively small supplies, or none at all, with which to meet the early demand. The effect has been to create a demand such as is not often experienced, and trade is extremely promising.

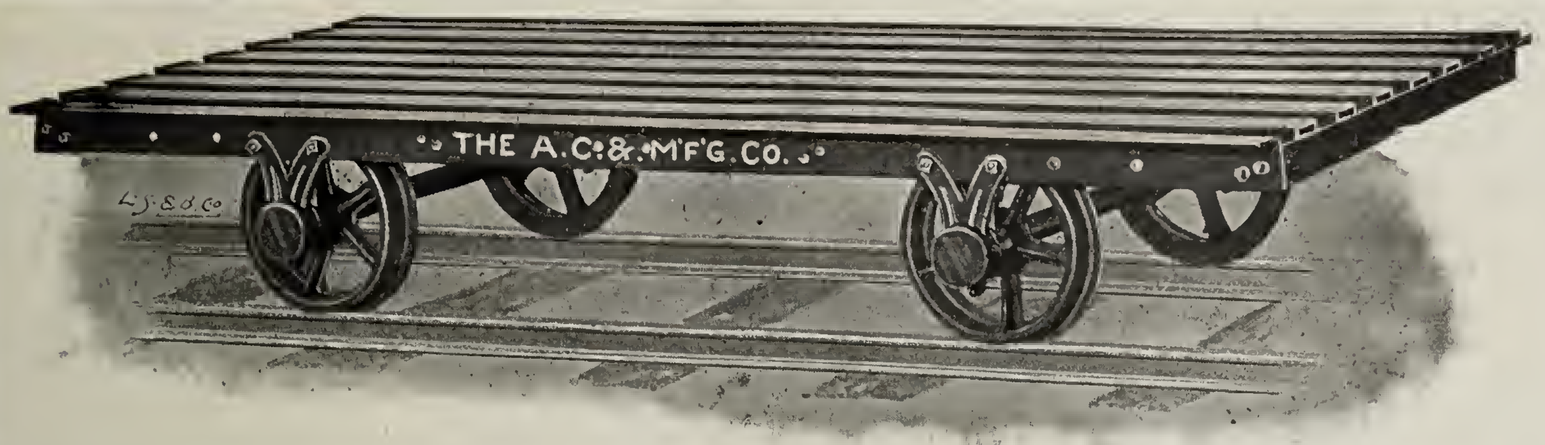
It has been impossible to learn what has been done along the Hudson in the way of improvements and new construction, but it is understood that it will be considerable. Makers believe that they are going to have another active season and they are preparing accordingly. The only thing that they fear is the possibility of a strike and that hasn't developed any very alarming features as yet. With a good market and good weather there will be such another development of the industry this season as has never been seen before.

The cost of building permits filed in New York in March was $22,928,805, a gain of 2 per cent. when compared with the corresponding month in 1905. It is significant that New York makes a gain of 2 per cent. when it is considered what enormous building preparations have been in progress all through the past year. The outlook for this year is quite as good, and unless there is something to prevent, now wholly unexpected, the coming season will show quite as much gain for the entire season. The total amount in Philadelphia was $5,132,545, a loss of 19 per cent. Paterson, N. J., showed a total of $66,644, a loss of 24 per cent., but it must be remembered that reconstruction following the great fire was practically ended last year. Burton.

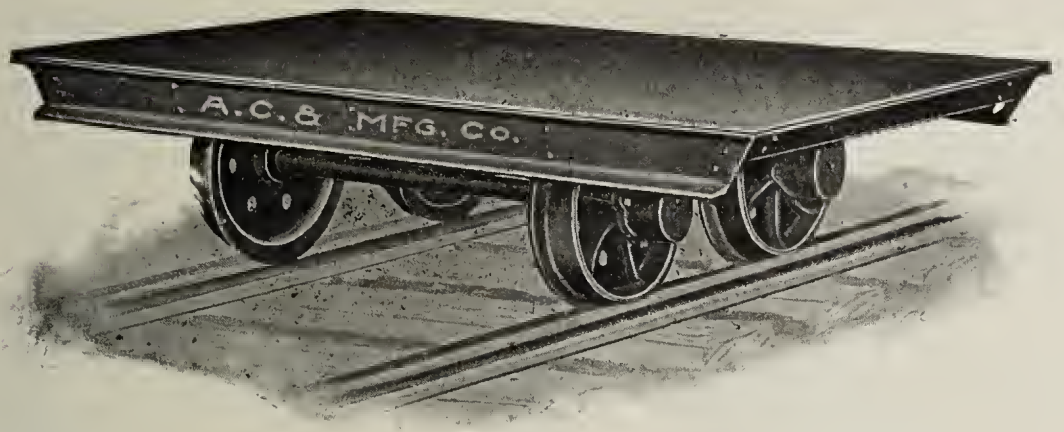
GIVE US THIS DAY OUR DAILY BREAD
McCutcheon

WHERE THE BURDEN OF STRIKE TROUBLES WEIGH THE HEAVIEST.

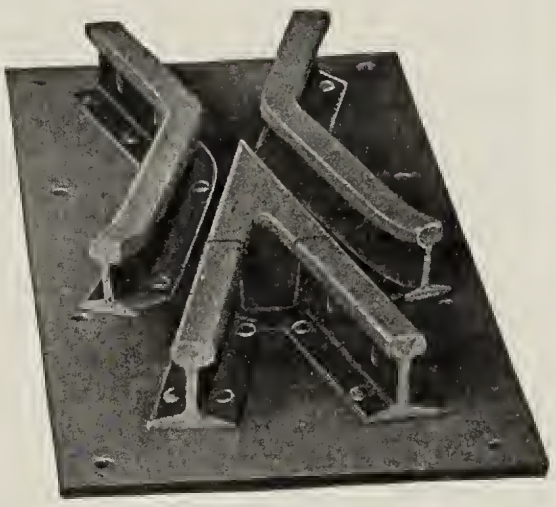
"Well, the worst has come. They've ordered me to strike." "You? Why, you have no grievance, have you?" "No, but the leaders don't want to give in." "And will you lose your job?" "Very likely." "Does the public sympathize with the strike?" "The public hasn't a clear idea what the strike is about." "But you surely can't win if the public doesn't sympathize with you, and you can't expect sympathy if you have no grievances. "Who ordered you to strike?" "The strike leaders." "Will they lose their jobs?" "No."—Courtesy of the Chicago Daily Tribune.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



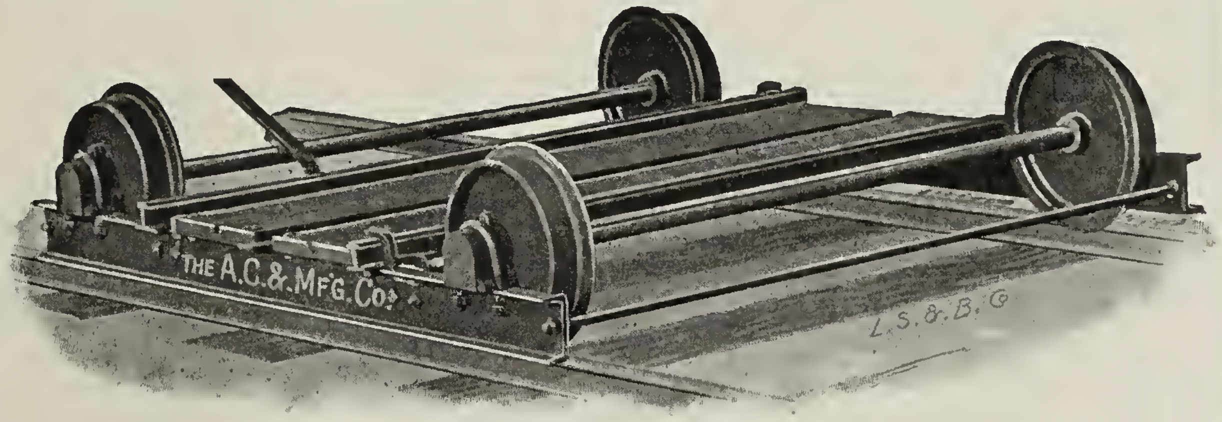
No. 1025. Steel Frog.

The Atlas Car & Mfg. Co.,

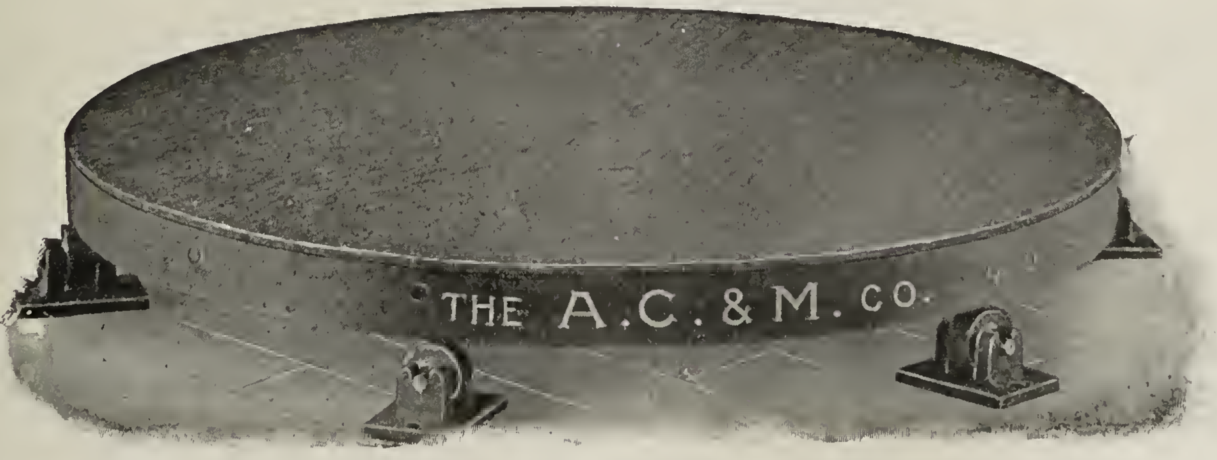
CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc Also Transfer Cars, Turntables, Clay and Dump Cars.

No. A. Flanged Pallet.

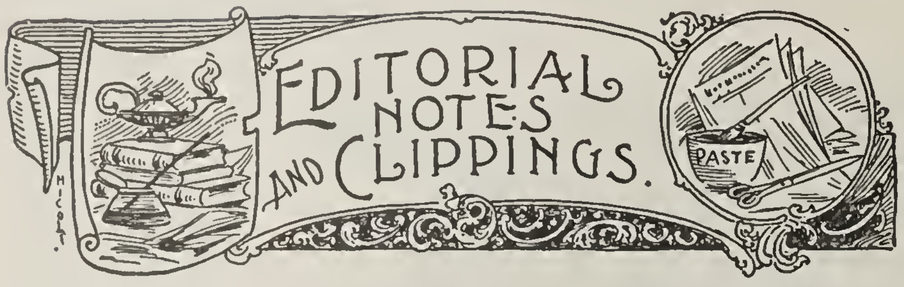


No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

See Ad on Page 706.



EDITORIAL NOTES AND CLIPPINGS.

Andrew Urban has purchased the brickyard of H. A. Darrow at Minot, N. D.

The Corbin Brick Company, Corbin, Ky., has been incorporated to manufacture brick.

C. E. Anderson and G. W. Kay are making preparations to manufacture brick at Westminster, S. C.

J. E. Carson is at the head of a company which will erect a $50,000 brickmaking plant at Charlotte, N. C.

E. W. Redman has purchased the brick and tile plant of D. C. Gibbs at Ithaca, Mich., and will operate same.

Oscar T. Cassidy is erecting a modern brickmaking plant at Gulfport, Miss., for the manufacture of pressed brick.

Summit, Miss., is to have a new brick-manufacturing plant of 50,000 daily capacity. L. E. Schilling, of Magnolia, Miss., is at the head of the movement.

The Baltimore Brick Company, Baltimore, Md., sustained a $1,000 damage by fire which destroyed their hay sheds. The loss is wholly covered by insurance.

Mr. Edward A. Schuesler, Buffalo, N. Y., has ordered from the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa., an all-iron and steel style "P" brick machine.

The Southern Sewer Pipe Company, North Birmingham, Ala., will shortly begin the enlargement of their plant to about twice its present capacity. When completed it will be one of the largest of the kind in the South.

Messrs. S. H. Fuller, James H. Beacham and B. M. Grier have formed a copartnership under the firm name of Dublin Brick and Lumber Company, at Dublin, Ga. The capital stock has been fixed at $25,000, all of which has been paid in.

The East End Brick Works, East Catasauqua, Pa., is greatly enlarging its plants and is changing the "Martin" horse-power brick machine to steam power and will fit the machine up in combination with the "Martin" pug mill, elevators, crushers, etc.

The Independent Brick Company has a large force of men at work getting things in readiness for the erection of their immense brick plant at Bordentown, N. J., where they have an immense deposit of very fine clay. They expect to have the plant ready for operation by midsummer.

The Wilson Brick Company, Windsor, Conn., has filed articles of incorporation with the Secretary of State. Frederick H. Young and Abraham E. Snow, of Springfield, Mass., and Arthur B. Clapp, of Brattleboro, Vt., are the incorporators. The authorized capital stock is $50,000, all paid in.

L. O. Wilson, Free Smith, R. S. Trulock, W. I. Goff and W. T. Beeks, all of El Reno, Okla., have formed a corporation with a capital of $25,000. The company will in the near future construct a brick and tile plant on the site of the Montrief-Ernest brick plant recently destroyed by fire.

W. H. Burland and Charles Varian are preparing to put in a large brick yard and kiln on the old brick grounds at St. Anthony, Idaho. They expect to burn 1,000,000 brick this season, and expect to continue the business permanently. Mr. Varian, manager, has had a great deal of experience in the manufacture of brick.

Mrs. J. H. Brown, Fort Salunga, N. Y., is installing a "Martin" outfit complete, including the brick machine, pug mill, elevators, crushers, etc., together with the latest improved "Martin" patented style of handling and drying soft-mud brick, all of which is to be installed by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

The Cormack property on the Hudson River, near Esopus, N. Y., consisting of forty-five acres, has been sold to a syndicate of New York building men, who are going to spend $15,000 developing a modern brickyard run by electricity. They are large builders and will use the entire output themselves. B. Bergman, who has been a practical brick man for forty years, is to have charge of building and managing the yard.

Wm. Cooper, of Meadows, Idaho, will erect a brickmaking plant at Council, Idaho.

The Alsey Brick and Tile Company, Alsey, Ill., has been incorporated by Matt Hoots and Henry Pfenninger and others, for $25,000.

The Veneable & King Brothers, of Rockwood, Tenn., has leased the brick and tile plant at that place and will operate same the balance of the season.

The Lowe Brick Company, of New Paltz, N. Y., has been incorporated with $40,000 capital by Frank Lowe, F. J. Le Fevre, O. P. LeFevre, New Paltz.

Bennett & Smith, formerly prominent produce dealers of Gleason, Tenn., for many years, are putting in a new and up-to-date brickyard. The machinery will be run by a 15-horse-power gasoline engine.

The Benson Brick Company, of Cohoes, N. Y., has been incorporated with a capital of $20,000. The directors are Martin M. Benson, John Benson, Edward Penrose, Harmon Eggers, Michael Murphy, all of Cohoes.

The Stuyvesant Brick Company, Stuyvesant, N. Y., is putting in three "Martin" latest improved style "A" machines, each fitted up complete with pug mill, elevator and sander, furnished by the Henry Martin Brick Machine Manufacturing Company, of Lancaster, Pa.

Harry B. Fox, the manager of the J. B. Fox Brick Company, Toledo, died at his home in that city April 15 after a short illness. Mr. Fox's death was particularly sad owing to the fact that he was the third member of the family to die within the last four months. He left a wife and one child.

The Humboldt Brick Company, Humboldt, Neb., has its new plant at that place almost ready for operation. The plant is equipped with up-to-date machinery throughout and has a capacity of 60,000 brick per day. The plant is something the town has long needed and will be run the year around.

Dr. T. A. Bellanmy, of Florence, Ala., has purchased the large plant of the Sheffield Brick and Tile Company at Sheffield, Ala. The plant is one of the most extensive of the kind in north Alabama and has just been equipped with an entire outfit of new machinery.

A large brickmaking plant is to be established at Windsor, Broome County, N. Y. Mr. Matthias Stipp, of Scranton, Pa., is at the head of the enterprise, which will be managed by W. E. Bennett, of Lanesboro, Pa. They have fifty acres of valuable clay land and will erect a plant of 60,000 daily capacity.

The Ross-Keller Triple Pressure Brick Machine Company, of St. Louis, Mo., has just closed a contract with Mr. O. T. Cassidy, of Gulfport, Miss., for the installation of a complete 4-mold brick plant to be located near Gulfport. The machinery is now being shipped and the plant will be in operation about the first of June.

The Simons Brick Company, Los Angeles, Cal., has purchased 100 acres of ground at El Carmel, Cal. The purchase was made, it is said, for the purpose of moving the various plants of the Simons company to El Carmel and establishing a new industrial town. The company will erect a warehouse and manufacturing structures and will give employment to 100 men.

E. G. Hess, of Monroeville, Ohio, has purchased thirty-two acres of land at Pierre, S. D., on which he will erect an up-to-date brick-manufacturing plant. Mr. Hess has his son associated with him, and they will get everything ready to make brick in the very near future. They will make wire-cut, stiff-mud brick at the outset, but may add a line of pottery later on. Mr. Hess is an experienced brick manufacturer and is quite enthusiastic over his new location.

The Williamsburg Brick Company is a new concern which has bought the plant of W. L. Jones at Williamsburg, Pa. The plant has been remodeled, a new boiler and engine installed and will soon be turning out a high-grade brick. The officers of the new company are: President and general manager, Melville DeBaun, formerly connected with the Roseton Brick Company, Roseton, N. Y.; vice-president, James Cathcart, formerly of Newburg, N. Y., and secretary and treasurer,

[Continued on page 774.]

Brick Made Today.
Set in Kiln Tomorrow.
Thoroughly Dry.

Brick Dryers

Work every day.
No loss from rain or frost.
For information and price
write

No expensive buildings.
No stacks.
No fans.
No engine.
No cars.
No tracks.

C. & A. POTTS & CO., Indianapolis, Ind.

(See ads on pages 812 and 813.)

EDITORIAL NOTES AND CLIPPINGS—Continued.

Robert T. Boyd, formerly of the Rose Brick Company. Mr. Boyd's headquarters will be in New York City.

Mr. Jas. W. Buttermore, Connellsville, Pa., is putting in a "Martin" latest improved style "A" machine with double mold entrance.

The Unique Brick and Tile Company, Portland, Ore., has been incorporated with $20,000 capital stock, by B. F. Hoover, A. F. Hoover, Henry Black and H. Hanni.

The Clermont Brick and Tile Company, of Biloxi, Miss., has been organized by George Gombel, O. E. Thompson and J. A. Broadus to manufacture brick, tile, etc.

R. A. Haley has his new plant at Waynesboro, Pa., now ready for operation. The old plant has been dismantled, and they will soon be turning out a fine quality of brick at the new one.

John W. Goulding has bought the old Whittaker brickyard at Trenton, N. J., and as soon as the machinery can be installed will begin the manufacture of brick. This plant has been closed for twelve years.

In a recent letter, the American Process Company, New York City, N. Y., states that it has closed contracts for its dryer with the St. Louis Clay Burning Company, St. Louis, Mo., and the Dominion Press Brick Company, Winnipeg, Manitoba.

The plant of the Wick Beem Brick and Tile Company at Lehigh, Iowa, has been sold to J. A. Long and Warren Overpack, of Portland, Ind. Machinery has been ordered and the plant will be remodeled. The chief product will be vitrified sewer pipe.

Charles S. Speese and Edward J. Pfeffer have formed a partnership and will carry on the tile business extensively at Gettysburg, Pa., at the plant formerly operated by Mr. Speese. Additional machinery will be placed and the works greatly enlarged.

Mr. John F. Goulding, Trenton, N. J., is installing a "Martin" outfit, including "Martin" latest improved style "A" machine, with pug mill, disintegrators, elevator, etc., complete, purchased from the Henry Martin Machine Manufacturing Company, of Lancaster, Pa.

A partnership has been formed by J. H. Thompson, of Birnamwood, Wis., and Wm. Schmidt, of Eland, Wis., for the manufacture of brick under the firm name of the Eland Brick Company of the town of Birnamwood. The plant will be located one mile north of Eland and three miles south of Birnamwood.

F. D. Green, president; U. S. Hauerwas, general manager, and S. P. Merrill, secretary and treasurer, are the officers of a company just formed which has purchased the Hauerwas Brick Manufacturing Company's plant at Florence, Ala., with twenty acres of fine clay land. The company is capitalized at $12,000 and will put in new machinery and greatly improve the plant.

S. P. Belcher, superintendent of the Allentown Paving Brick Company, Allentown, Pa., was stricken with heart failure while returning home from the plant in the evening of April 23d, and had been dead some time when found. Mr. Belcher was fifty-two years old and was well known among brick manufacturers throughout the country. A wife and four children survive.

The F. H. Goss Brick Company, Tacoma, Wash., has its plant on the water front almost ready for operation. As soon as the installation of the machinery is completed, the company will begin making bricks and expects to turn out 100,000. An agency will be established at San Francisco and vessels chartered to carry bricks to that city. The company expects a big demand for bricks from San Francisco as soon as the real active work of rebuilding begins.

Gustav A. Wagner has leased forty acres of land at New Bedford, Ohio, on which he will erect a brick plant with a capacity of 100,000 building brick a day. The terms of the lease stipulate that the plant be completed and in operation within five months. The property is leased on a royalty. Tests of the soil show that there is thirty-six feet of yellow clay, below which is forty feet of shale. After the clay is stripped off, shale bricks, sewer pipe and tile will be manufactured. The buildings and machinery for the plant will cost $50,000.

The Jakin (Ga.) Brick Company has made application for a charter. H. F. Hamil, Will H. Krause, C. K., J. A. and J. B. Bivings are interested.

J. S. Klinefelter, Alliance, Ohio, writes that he is interested in a company that is going to establish a brick plant near that place, and he wants to get in touch with manufacturers of brick machinery, etc.

The Mt. Gilead (Ohio) Tile and Pottery Company, $15,000, has been incorporated by J. C. McCormick, H. E. Hubbard, J. A. Wilhelm, J. P. Price and R. J. Pumphrey.

Elmer S. Ranourg, an employe of the Coffeyville Vitrified Brick Company, at Chanute, Kan., fell into the dry pan and was so severely injured that he died within a short time.

The plant of the Fultonham (Ohio) Brick Company was almost totally destroyed by fire May 12 by fire of unknown origin. The loss is estimated at $15,000, with no insurance.

Daniel Hunt, a well-known brickmaker of Boise, Idaho, lost his life recently as the result of a runaway team dashing into his brick wagon. He was knocked from the seat and one of the wheels passed over his neck. He was fifty years old and unmarried.

The Salt Lake Brick Company, Salt Lake City, Utah, has shipped 8,000,000 brick so far to the smelters at Garfield, Utah, and expects to ship 8,000,000 more before the order is completed. The brick is being shipped at the rate of 60,000 to 100,000 per day. The company has been greatly hindered in the manufacture of fine pressed brick by the wet weather which has continued since February.

Ed B. Reed recently purchased the Wilson Hoover homestead at Clearfield, Pa., and has leased the clays and coal in that neighborhood from the various owners. It is said Mr. Reed will erect a fine brick and tile plant on this property and will have the same in shape to manufacture brick in ninety days. Mr. Reed having disposed of his interest in other brick plants, is erecting the works referred to on his own account. He is a thorough brickmaker.

Parker's Gas Producer Continuous Kilns.

Fuel saved from 50 to 60 per cent.
Uniform burns. Simple construction.
Easily repaired. Correspondence solicited.

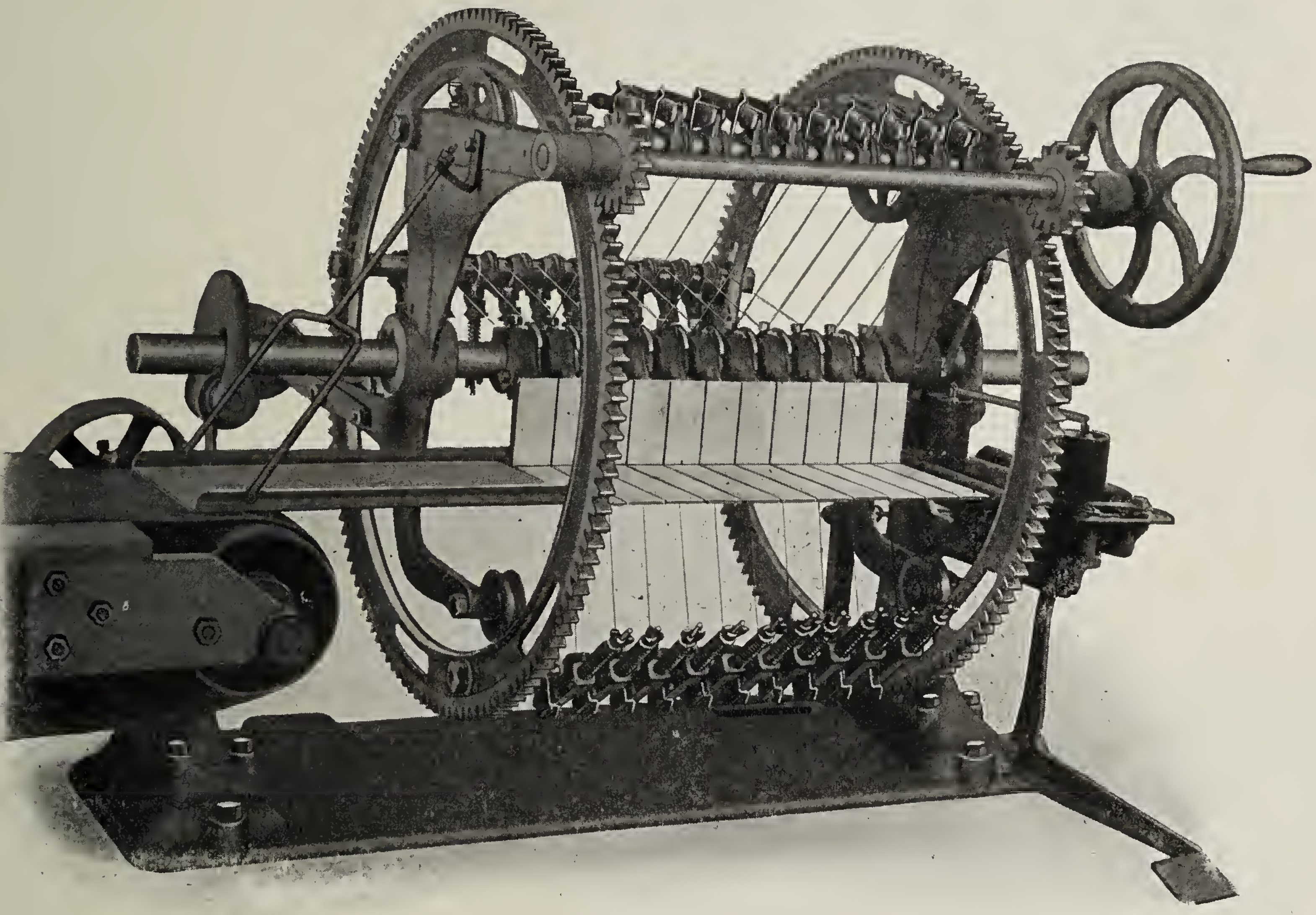
LEMON PARKER,
3314 Morganford Road, St. Louis, Mo.

Built Right Run Right

Automatic Quality at Hand=Power Price.

Our No. 62 Hand-Power Rotary Cutting Table places within the reach of every brickmaker a table which will cut brick equal in quality to the highest price automatic tables at a price which makes it a positive economy. In speed it is limited only by the ability of the operator. It is simple, strong and easy to operate. Will not get out of order, and will cut the very best grade of brick. The downward movement of the wires insures smooth edges. Write for complete description.

We also build every machine and appliance used in manufacturing every class of Clay Products, Waste Heat, Steam and Hot Air Dryers.



No. 62 Hand=Power Rotary Brick Cutter.

Dry Press Brick Machinery.
Stiff Mud Brick Machinery.
Soft Mud Brick Machinery.
Sewer Pipe Machinery.
Pottery Machinery.
Sand-Lime Brick Machinery.

We Build Our Own Dryers And Can Guarantee Their Quality.

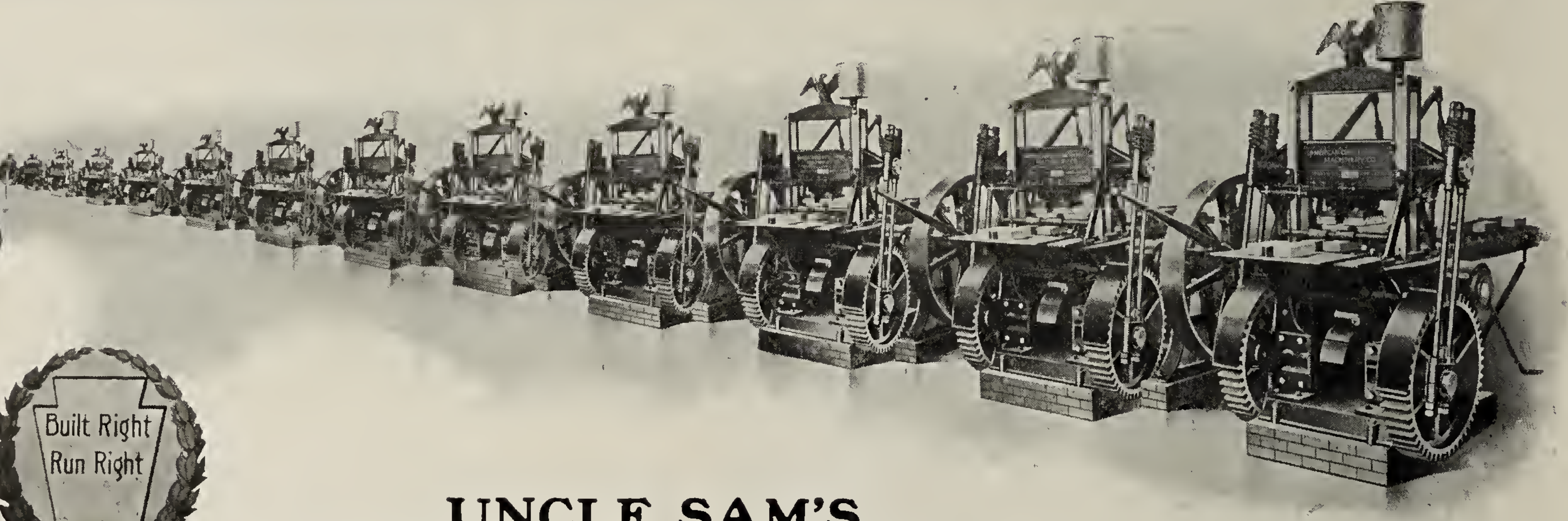
The American Clay Machinery Company,
BUCYRUS, OHIO, U. S. A.

It Takes a Lot of Coal. You Need a Lot But You Waste

a lot more than you need to. It's to save a generous per cent. of this coal that we have invented and put on the market our Waste Heat Dryer. You save all the coal formerly used for drying. Besides you get better results and save the labor of handling. It's an ideal method of drying. It's an ideal method of saving. It's an ideal method of convenience. We make our own fans for these dryers. We know their quality and guarantee them. We build other kinds of dryers for those who need or want them, but all are "Built Right and Run Right."

THE AMERICAN CLAY MACHINERY COMPANY,

Bucyrus, Ohio, U. S. A.



Built Right
Run Right

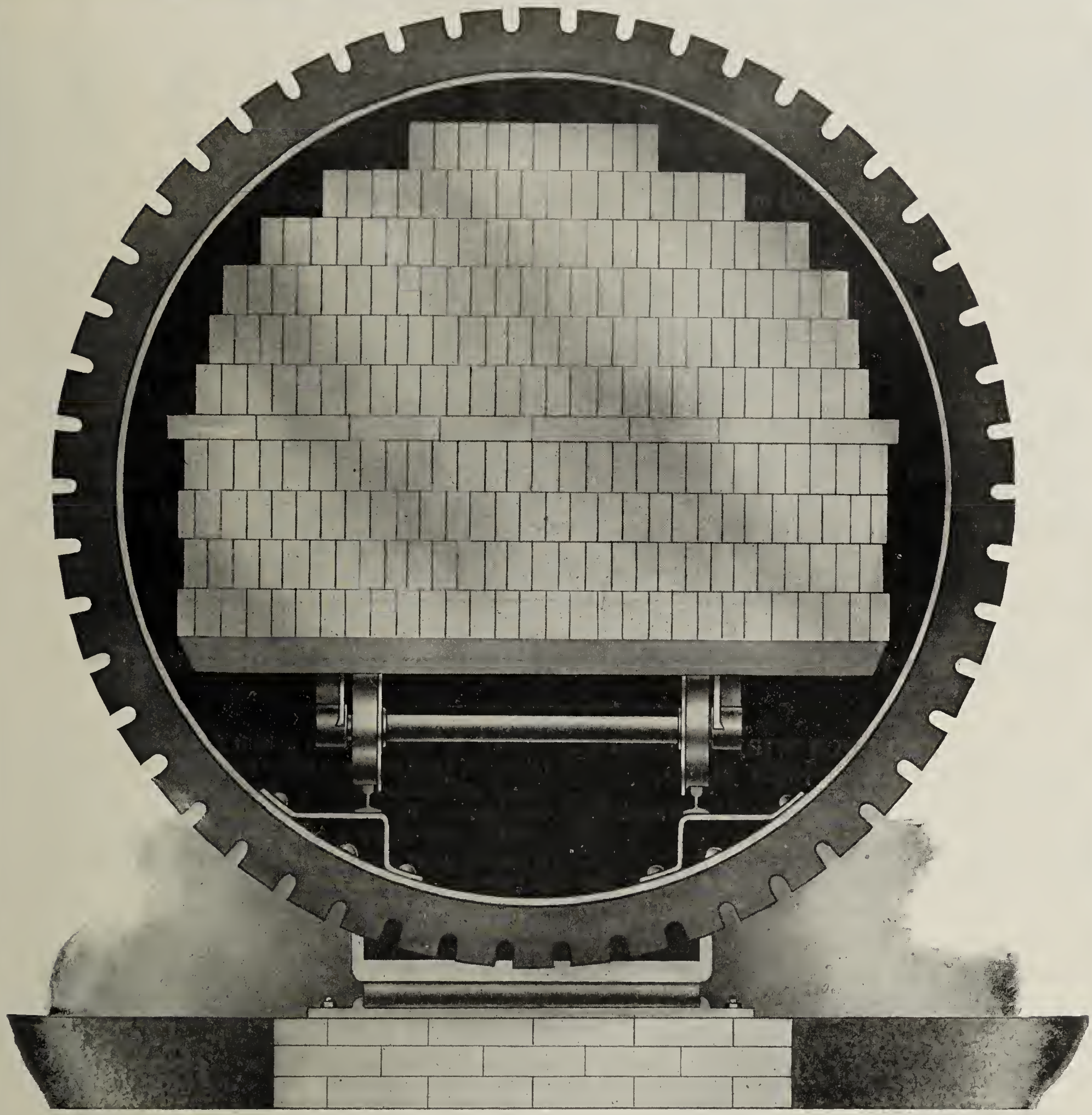
UNCLE SAM'S
BATTERY OF EAGLES
at **GALESBURG, ILL.**

A Record of Its Own. NO REPRESS EVER BUILT CAN EQUAL THE EAGLE. NO REPRESS OF THE FUTURE WILL SURPASS IT.

The above picture shows a line of Eagle Represses which are in operation in a single factory. Since this picture was made two more Eagles have been put into this same factory. This record is not equaled by any repress in any other plant in the country. The Eagle has other distinctive records, the greatest of which is "quality." There is also simplicity, capacity and durability. A complete line of clayworking machinery of quality.

THE AMERICAN CLAY MACHINERY COMPANY,

Bucyrus, Ohio, U. S. A.



INTERIOR VIEW OF HARDENING CYLINDER.

We build the most dependable line of sand-lime brick machinery on the market, including every tool appliance or machine required in a modern sand-lime brick plant. Our catalogue of this line of machinery is yours for the asking. It tells of the quality of each machine and quality of machinery is the keystone of success in the manufacture of sand-lime brick.

We also build a full line of machinery and appliances for making clay products by all processes. Write concerning your needs.

The American Clay Machinery Company,

(See Advertisement Dry Press Machinery, Page 718.)

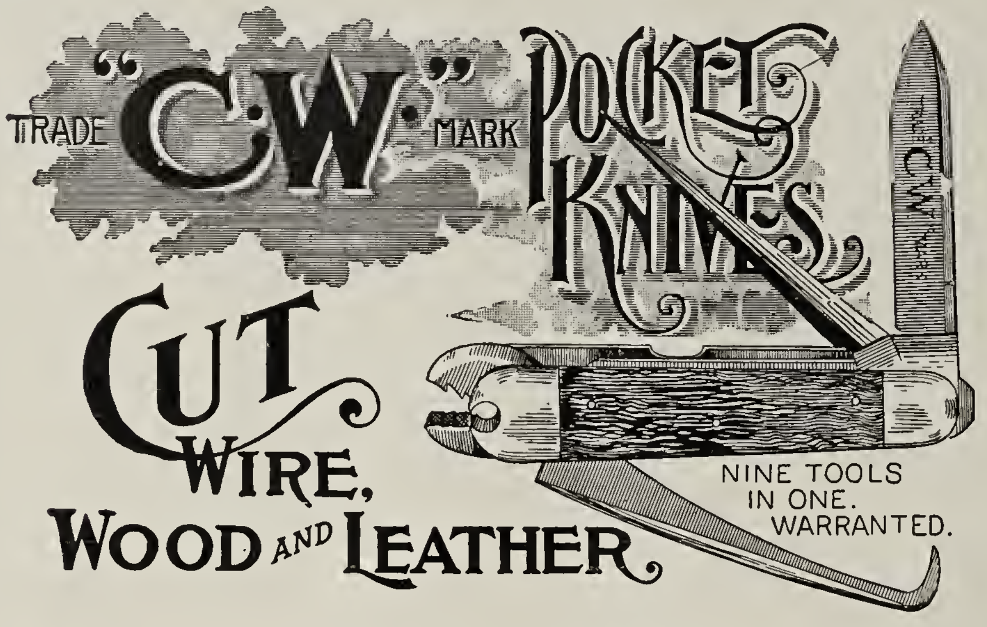
Willoughby, Ohio, U. S. A.

THE CLAY=WORKER'S

POCKET KIT.

Worth its Weight in Gold to Every Factory Superintendent and Foreman.

EMBODIES
1. Pocket Knife.
2. Leather Punch.
3. Swedging Awl.
4. Wire Cutter.
5. Wire Pliers.
6. Alligator Wrench.
7. Hoof Hook.
8. Screw Driver.
9. Screw Bit.


TRADE "C.W." MARK
POCKET KNIVES
"C.W."
CUT WIRE, WOOD AND LEATHER
NINE TOOLS IN ONE. WARRANTED.

INVALUABLE TO
Yard Superintendents,
Factory Foremen,
Mechanics, Miners,
Farmers, Horsemen,
Sportsmen and
ALL WORKINGMEN.

This is Not a Cheap Knife, But a First-Class Combination Tool Built for Practical Use.

CUTS OFF BARBED FENCE WIRE AS EASILY AS AN ORDINARY 8-INCH PLIER.

Can be carried in the pocket and used as an ordinary knife, but is far stronger and more usefel.

"A Stitch in Time Saves Nine."—So it is about a clay plant, a bolt tightened at the right time may save a serious breakdown, causing loss of time and money. How often would this be avoided if the superintendent or foreman had the right tool within reach when wanted. How often are these little, but very important details neglected because the necessary tool is not convenient, or has been mislaid, and how much time is lost in consequence. Avoid all this by carrying in your pocket the C. W. Pocket Kit. You will find use for it a hundred times a day.

One Tool Does Not Interfere With the Free Use of Another. Each One Works Independently.

A Great Premium Offer.

This POCKET KIT, which is a marvel of mechanical ingenuity, will be mailed to any address, postage prepaid, for $1.50.

Or we will mail this POCKET KIT and THE CLAY-WORKER for One Year to any address in the United States or Canada for **$2.50**

THE C. W. Pocket Kit is built for practical use, and is not filled with knickknacks or flimsy makeshifts as is the case with ordinary combination knives. Instead it is a practical, efficient combination. Its workmanship is first-class. All rivets are countersunk. The temper is drawn in Screw Driver, and Point of Awl to prevent either from breaking. It is no more clumsy or awkward to carry in the pocket than an ordinary three-bladed knife. The blades are made of the best 85 carbon cutlers steel, and tempered to withstand hard usage.

The Pliers and Wire Cutters are Drop-Forged TOOL steel (not steel castings), and tempered especially to do the work required of them, and give entire satisfaction in handling and cutting fence wire, baling and binding wire, harness rivets, etc.

The Leather Punch will be found indispensable for making various sized holes in leather for buckles, rivets, belt lacing, etc.

The Leather Punch acts as a wedging awl or marlin spike WHEN TURNED TO THE LEFT; especially adapted for use in LACING BELTS, untieing knots, etc. Besides being a perfect leather punch and swedging awl, this tool is a perfect screw bit, making a tapering hole in wood for various sized screws WHEN TURNED TO THE RIGHT.

The Screw Bit and Screw Driver features of this knife are perfect in their operation.

The Lace Hook and Hoof Hook formed on end of plier handle will be found convenient in many ways.

T. A. Randall & Co., Publishers The Clay=Worker, Indianapolis:

You will please send me THE CLAY-WORKER POCKET KIT and enter my subscription for THE CLAY-WORKER to be sent to the address below regularly, until ordered changed or discontinued,

beginning with the . . . . issue. Enclosed find $. . . . .

Name . . . .

Postoffice. . . . .

Street and Number. . . . .

County . . . . State . . . .

Written for The Clay-Worker:

POTTERY NEWS.

TRADE WITH THE POTTERIES in general has been very good and the condition with all the plants seem to be very favorable for an exceptionally good year.

The new works of the North American Manufacturing Company of this city is progressing nicely and from all appearances will be placed in complete operation some time this year. The new plant has thirty kilns. When completed the new plant will be known as the Homer Laughlin China Company. The capacity will be equivalent to thirty-six ordinary size kilns. The old plant of the Homer Laughlin China Company, in East End of this city, will then be changed to the Wells-Clarke China Company. Mr. W. E. Wells, now secretary of the Homer Laughlin Company, will be president of the new company, outside of his connection with the new plant in his old capacity.

The C. F. Brunt Porcelain Company, of this city, has just completed the erection of two new kilns and a large new addition is now being built. They have just completed the installation of additional machinery, which will increase their output fully 50 per cent.

The new plant of the Kenilworth Tile Company, of this city, is almost completed, and the kilns will be completed within the next thirty days, and the company expects to have the entire plant in operation within the next sixty days. The company will make a special line of tiles, different from anything on the market at the present time, and will not make anything in the regular line of tile.

The R. Thomas & Sons Company, of this city, is erecting two new kilns at their Lisbon works at Lisbon, Ohio. They have also erected a new kiln at their East Liverpool plant, which takes the place of a new one just torn down. The Lisbon plant will also be doubled in size by the erection of a large brick addition.

Mr. Wm. Cartwright, president of the Cartwright Brothers Company, one of the oldest potteries in this city, died Saturday, May 12, and his brother, Samuel Cartwright, vice-president of the company, died Sunday, May 13. Both were the senior members of the company and were among the oldest potters in the city. They were well liked and beloved by all who knew them, and their loss will not only be mourned by those who were related to them but by all interested in pottery circles and their wide circle of acquaintances. Mr. Wm. Cartwright was a director of the Potters' National Bank, of this city, and treasurer of the Potters' Mining and Milling Company. This will leave the company entirely in the hands of the younger generation, their sons, J. T. Cartwright, secretary of the company, and Frederick and Harry Cartwright, all of whom have been in the plant since early youth and who are well versed in the pottery business and perfectly capable of taking care of the large plant left in their keeping.

Burgess & Co. has started up their new pottery supply factory which they completed about three years ago but which they have never occupied until the present time.

The Globe Stoneware Company, of Crooksville Ohio, which was burned out by fire some time ago, the entire plant with the exception of the kilns being destroyed by fire, has been cleaned away and the new plant has been started. The new plant will be of brick and will be completed within the next sixty days. The plant has a capacity of four 25-foot kilns.

The American Pottery Company, of Crooksville, Ohio, has leased its plant at McLuney, Ohio, to Clark Brothers & Co., who will start the plant up at once and will manufacture flower pots exclusively. Mr. Wm. Clark was formerly manager of the American Pottery Company.

A strike of all the potters in the stoneware potteries in the Crooksville district closed all of the potteries there within the past two weeks, and the matter has not been straightened out as yet, although an arbitrating committee has been at work for about a week. Only one stoneware pottery is in operation, that of the A. F. Hull Pottery Company, which has compromised matters on a profit-sharing or co-operative basis. It is probable that matters will come to some kind of a climax during the present week, although nothing definite can be said as yet.

A big merger of the potteries of the West has been reached through the organization of the Western Stoneware Company, of Monmouth, Ill., which takes over all potteries at Macomb, Ill., the Weir Pottery, and the Monmouth Pottery, at Monmouth, Ill. Mr. W. D. Brereton, of the Monmouth Pottery Company, is president of the new company.

The American Porcelain Company is the name of a new company going into the electrical porcelain business at New Castle, Pa.

The Standard Porcelain Company, of New Cumberland, W. Va., whose plant was partially destroyed by fire some time ago, is rebuilding the burned portions of their plant and will be in entire operation again within a short time.

The Pfaltzgraff Pottery Company, of York, Pa., which has been erecting a new pottery at York, Pa., in place of the old plant, which was burned out six months ago, has the new plant about completed and is now installing the new machinery and expects to be ready to place the entire plant in operation within the next two or three weeks at most. The company has a plant with a capacity of four kilns.

The Beck Pottery, at Crooksville, Ohio, which has been idle for about two years, has been started up again. The plant is being operated on the co-operative plan by some of the strikers from the Crooksville potteries. They will make stoneware and flower pots.

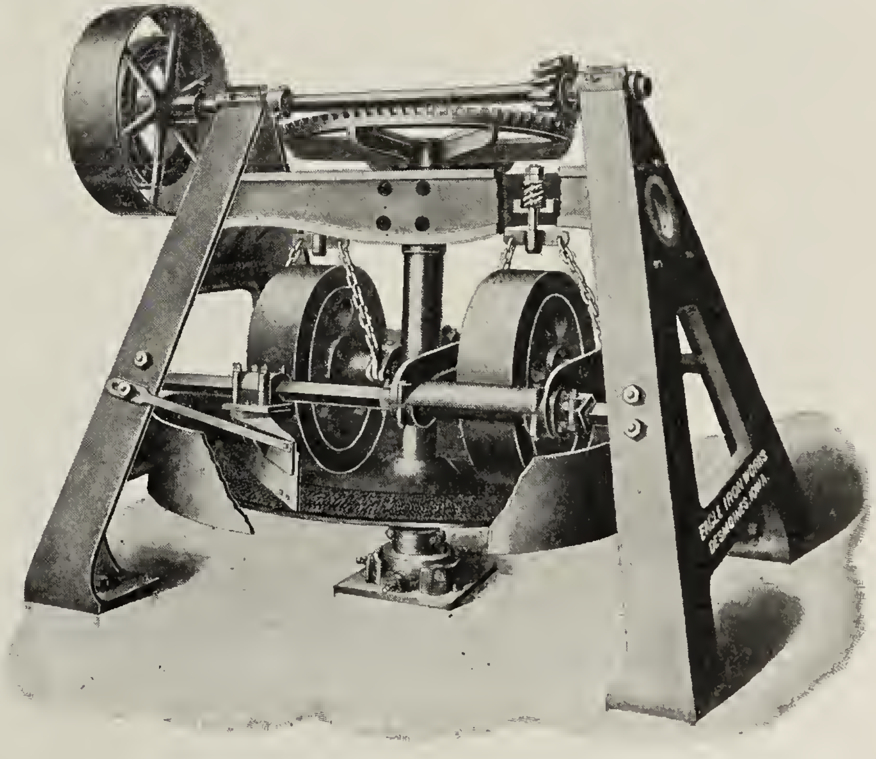
The American Encaustic Tiling Company, of Zanesville, Ohio, has just completed the erection of a spacious new office building three stories in height and has also built an immense addition to the works there.

Mr. C. E. Town, treasurer and manager of the Union Pottery Company, of Zanesville, Ohio, finding the pottery business too strenuous for one to look after, has entered the matrimonial field, and skipped away to Maine recently, where, it is reported, he will find a helpmate and return to Zanesville to again struggle with the mixing of the sand and marl. Mr. Town has won quite a reputation on the specialties made at the pottery of which he is manager.

Tom Potter.

Independent and Suspended Mullers

the distinguishing feature of our **DRY PANS.**



Other valuable features which our catalogue fully describes.

EAGLE IRON WORKS,
Des Moines, Iowa.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than $1.00.

FOR SALE—Cheap. One Drake stiff-mud 30,000 capacity brick machine; one J. D. Fate hand side-cut board delivery table. Price, $250. Address J. H. FRANCIS,
5 1 1pm Peoria, Ill.

WANTED—At once. A man thoroughly capable to manage and properly run a vitrified brick plant. Must be industrious and sober and understand the business. None other need apply. Address
K. C. P. CO.,
5 1 d Care Clay-Worker.

WANTED—First-class man as superintendent for a stoneware plant. Plant has five kilns, and located in a pleasant city. Will pay first-class salary provided man can produce first-class ware. No one need apply who cannot show ability by references. Address "B," Care Clay-Worker. 5 4 dm

FOR SALE—One No. 9A Brewer brick and tile machine. Also one No. 1 Brewer pug mill that is used with same. Used but one season up to this time. Reason for selling, have put in a larger machine, No. 10, same make. Address D. A. LAYTON,
5 1 d Marion, S. C.

FOR SALE—Twenty thousand capacity brick plant, complete with dry kiln. Brick retailing at $9. Big demand. Price, $9,000, small cash payment and balance $1 per thousand on all brick made. For particulars apply to J. H. BUSCHMANN,
5 1 cm Hattiesburg, Miss.

FOR SALE.

One Hercules, Sr., soft-mud machine.
One mold sander.
Two sets molds.
Eighty racks for cars for soft-mud brick.
One Carnell repress.

All have been used but very little and are practically as good as new. Will be sold at a bargain. Address
S. J. CAMPBELL,
5 tf d Independence, La.

WANTED—TERRA COTTA WORKERS.

We want several good kiln setters, accustomed to handling high-class glazed work and who are rapid workers. Permanent employment guaranteed to good men, as our works are constantly run full. Rocky Hill is in central New Jersey, near Princeton and half way between Trenton and New Brunswick. Address
EXCELSIOR TERRA COTTA CO.,
5 2 d Rocky Hill, N. J.

FOR SALE—One Freeze Union No. 1 stiff mud brick machine with automatic cutter. One 100 H. P. New York Safety high speed automatic engine. One 60 H. P. Chandler & Taylor engine. One 15 H. P. Westinghouse automatic engine. One 80 H. P. Chandler & Taylor tubular boiler. One 60 H. P. feed water heater. Two duplex boiler feed pumps. One deep well steam pumping engine. One 6 H. P. Cushman gasoline motor. One hand repress. All in good condition. Address
LINCOLN BRICK WORKS,
4 3 d Lincoln, Neb.

FOR SALE—One No. 60 Brewer cutter with three sets of platens. Cheap. Address
GUISE BRICK AND STONE CO.,
5 1 d Williamsport, Pa.

FOR SALE—Brick and building block plant. No competition. Doing good business. Good reasons for selling. Address
BOSE & KASER,
5 2 c Canal Dover, Ohio.

FOR SALE OR LEASE.

Good location for making brick of all kinds. Railroad runs over property. Good demand for all kinds of brick. For particulars address H. C. HANSON,
5 3 cm Barnum, Minn.

FOR SALE—The following American Clay Machinery Company machinery, in good condition and at a very low price: No. 2 Giant brick machine; horizontal hand-power cutting table; side-cut board delivery table, style "F"; No. 4 double mold repress; 5-foot dry pan; No. 4 pug mill, style "F." Address THE PEOPLES BANK,
5 1 d Nelsonville, Ohio.

FOR SALE—Two hundred and fifty double-deck dryer cars, dimensions as follows: Seven feet nine inches long, 39 inches wide, distance between decks, 20½ inches; distance between wheels, 41½ inches; gauge, 28 inches; diameter of wheels, 12 inches; weight, about 500 pounds. Steel decks. Bonnot Co. make. Address
DIAMOND PORTLAND CEMENT CO.,
5 3 dm Middle Branch, Ohio.

FOR SALE—Iron Quaker brick machine, with power gearing; 15-horsepower gasoline engine. Both in good condition and will sell separately. Address
FRED T. JONES,
Care Security Savings Bank,
5 1 d Columbus, O.

ENGINES AND BOILERS.

A large assortment of new and rebuilt engines and boilers, all sizes and styles, at low prices. Send specifications of your requirements and we will make you a special proposition.
THE RANDLE MACHINERY CO.,
5 tf dm 1735 Powers St., Cincinnati, O.

WANTED—Position as superintendent of soft mud or stiff mud plant, dry press or tile. Specially successful in burning. Well acquainted with shale, both in stiff clay and dry press work. Twenty-five years in the business. Will give bond to get results or no pay. Will run plant by the thousand, pay labor and fuel bills and get paid for salable stock only. Address Box 68, Castle Creek, N. Y. 5 1 c

FOR SALE.

Three Bonnot double-die steam represses, good condition; one Champion No. 4 rock crusher, new; one Wellington (large size) granulator, new; one Ross-Keller 4-mold dry press, practically new; one 30-horsepower engine, good condition; three gable-bottom dump cars, good condition; 4-mold Berg dry press, new. Address H. R.,
5 1 L Care Clay-Worker.

It is an Established Fact

that our

IMPROVED FLUE SYSTEM

is the ***IDEAL*** Flue System for New Kilns

and it puts Old Kilns on a Better Paying Basis. Brickmakers Who Wish to Improve Their Kiln Service will be benefited if they investigate. Write for cut and full particnlars to

J. P. Bradley & Co., New Cumberland, W. Va.

WARNING.

Notice is hereby given that the process of drying and burning brick by first setting green undried brick in horizontal courses in a kiln to form a layer thereof, then covering and drying such layer, and successively coursing, capping and drying separate layers of green, undried brick upon the last dried layer until all the layers are thoroughly dried, and then burning, is patented in U. S. Letters Patent No. 485,199 to J. C. Kinzel, dated Nov. 1, 1892, and all persons are hereby warned against using such processes without grant or license from the undersigned owners of said patent. Unauthorized use of the patented process will render the user liable to an action for infringement and the payment of damages to the owners of the patent, whose rights thereunder will be strictly enforced.

J. C. KINZEL,
J. S. KRAUSS.

Box No. 271. 128 Logan St., Knoxville, Tenn.

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol XLV. INDIANAPOLIS, IND., JUNE, 1906. No. 6.

Written for The Clay-Worker.

BRICK PAVEMENTS AS GOOD AS NEW AFTER FIFTEEN YEARS' USE THE EXPERIENCE AT STREATOR, ILL.

IN A COUNTRY which nature has endowed richly with coal, shale, fire clay, silica and common clay, Portland and natural cement-making materials, and an exceptionally fertile soil, it is natural that we should expect to find prosperous cities. Lasalle county, Illinois, is such a country, and among its prosperous cities Streator holds first rank.

Vermillion Street, Streator, Ill., Paved in 1894 With First Brick Made by the Barr Clay Co. Photographed November, 1905.

The same soil which furnishes the most abundant crops in the world also furnishes, a good part of the year, the worst roadways in the world. Thus Streator was face to face with the paving proposition early in its career. The City Fathers were wise in their day and generation and paved the streets with brick. The first permanent roadway improvement in Streator was made some fifteen years ago, when a two-course vitrified brick pavement was laid, and this pavement proved so good and so durable and satsfactory in every way that Streator has never put down pavements of any other material. Today this city of nearly 20,000 inhabitants has more than twenty-one miles of brick-paved streets. The early pavements of Streator were all two-course work with sand filler, and it speaks well, both for the brick and for the contractors, that no pavement has ever been relaid or shows any appreciable wear where it has been left undisturbed. Of late years Streator's pavements have been put down on a six-inch cinder foundation with a two-inch sand cushion and one course of paving block. These pavements are wearing excellently. The growth of a city is always hard on pavements; the repairs and connections with sewers, gas pipes and water mains make it necessary to tear up pavements, and the result is disastrous as a rule, for the reason that little or no care is taken to replace them properly. Brick suffer less, however, than any other paving material from being torn up and relaid. Streator, in common with most growing cities, has suffered from this evil, which while it goes to show that a city is prosperous, is disastrous to pavements. It is possible to avoid these evils, or at least to minimize them, if the work of relaying is carefully scrutinized and contractors compelled to do their work properly.

Most of the brick for the pavements of Streator have come from the plants in the immediate vicinity of the city. An abundance of fine shale and good coal makes the city a good locality for the manufacture of brick, and it is now one of the foremost centers in the State in the production of paving brick and sewer pipe. A description of one of Streator's most successful plants is given on a succeeding page of this issue.

Written for The Clay-Worker:

A SHORT TALK ON PAVING.

How the Question Is Being Settled at Suffolk, Va.

OUR LITTLE CITY is the pride of all Tide Water towns, "the peanut town" of the world, having more cleaning factories for peanuts than any city in the world. It is one of the greatest lumber manufacturing towns in this country. A town with six railroads; with a harbor accommodating vessels up to fifteen hundred tons. One of the leading oyster packing towns of this country; with its many brick plants, machine shops, and various other substantial manufacturing enterprises, and backed by a trucking country which feeds nearly all the Northern and New England markets, and possessed with a climate which can not be surpassed. Yet we are scarcely known to the outside world. Why? Simply because we are too slow to grasp the opportunities set before us.

We are now in our paving era and are considering what paving material we shall use. We have the right to bond our town for one hundred and fifteen thousand dollars; this is our limit and will be for many years to come. Now, shall we put down an expensive luxury in the form of asphalt or bitulithic. This has been a question of more than great interest in our town of late. To start with, our committee on streets, composed of about "one," let the contract to Warren Bros. Company for about seven thousand dollars' worth of bitulithic paving, without advertising for bids at all, when the town ordinance says all work exceeding fifty dollars shall be advertised thirty days. Why was this done and passed by without notice or legal action? The town advertised ("a new council") for bids on one hundred and fifteen thousand dollars' worth of paving. A few of the old council who were reelected said we want bitulithic and nothing else. They were wedded to their idol and "tarred all over." Why?—nobody knows. How old is bitulithic? What is bitulithic? Can they show a street ten years old? What is their guaranty? Five years. Where does our next bond issue come from in five years? Where does our money come from to buy a "tar pot" to boil the refuse of our gas plant, when we have not a gas plant? What will we do when the plumber tears up our "tar macadam" to fix a leak in the numerous water pipes which are put down out of common iron pipe instead of lead? We must pay $2.15 for an experimental street, only five years old, when we can have the best western vitrified brick laid on six-inch concrete at $2.17.

What is a vitrified brick? This is not a difficult question, for there are no secrets or any mystery about paving brick. They are brick, or block, made of shale fire clay, annealed or vitrified under a heat that would melt granite blocks, steel, iron, or most any other known article. Bitulithic would melt in the dry kiln used to take the moisture out of the brick before going to the burning kiln. What is the abrasion test compared to steel or granite blocks? It means they have a more durable wearing quality than either. Where can you back up your assertions? In nearly all the leading cities of the United States. Take New Haven, New York City, Brooklyn, Newark, Pittsburg, Cleveland, Canton, Mansfield, Chicago, Jacksonville, and scores of other cities all over this continent. What is their reply to inquiries? We have streets of brick, eighteen years old, on which other than for excavation we have spent the sum of nothing, and the streets are today in perfect condition. What better proof do we want than this? They say brick are rough and noisy. Were you to put a team on plate glass, it would make no more noise than it would on bitulithic. A vitrified brick street (though a little harder than plate glass) properly laid on a concrete subgrade, with two-inch sand cushion and properly grouted with Portland cement, is as near noiseless as any pavement known. From a sanitary standpoint it has no equal. A thoroughly vitrified brick is almost absolutely non-absorbent. The filth goes to the sewer. Now, with asphalt or bitulithic, where does it go? Into the street, then into the taxpayer's system. I think all doctors and druggists should be great advocates of "tar streets," under whatever name they may be classed. After a lot of hard work, on the writer's part, with the assistance of Mr. Will P. Blair, we won out by giving to the Southern Contracting Company, of Norfolk, the contract for about four thousand yards, over half of the work. The time is not far distant when this town will regret the day they did not give it all to vitrified brick. There was a question asked by a "stork" the night the council held their last meeting to award contracts, which read like this: Bitulithic to vitrified brick; "Bet-u-lick-us." Vitrified brick; "Yes, nothing soft about us."

H. L. Jacobs.

Suffolk, Va.

AUTO TESTS PAVEMENTS.

Macadam Better for Speed, but Dustier Than Brick Course.

At the instance of a prominent engineering firm of Chicago, the E. R. Thomas Motor Company has recently been conducting a series of road tests near its Buffalo plant. A car was set aside for experimental purposes on various kinds of roads. A brick pavement was selected as the standard, and a car was geared low enough to be capable of making just a mile a minute on the selected course. It was run over this measured brick pavement distance to prove that this speed was uniform, and then was taken over a measured mile of asphalt. Next a dirt road was tried, and then a stretch of macadam. As a result, the speed on these various road materials, with one mile in one minute over a brick pavement as the standard, was shown as follows: Brick pavement, 1:00; asphalt pavement, 1:02; dirt road, 1:05; macadam road, 0:58 2-5.

For speed it was shown that the macadam was faster than the other three, but for absence of dust the brick pavement was preferable. Observations show that the macadam pavement, unless oiled or sprinkled, is more dusty for all classes of travel than the brick pavement.

The report was made to the Chicago engineers that, while macadam is the best for speed, and, under ideal conditions, for comfort, too, it is less desirable than brick for practical everyday conditions.—Exchange.

EVERY NUMBER OF THE CLAY-WORKER WORTH THE YEAR'S COST.

Editor The Clay-Worker:

Enclosed please find money order value 11 shillings in payment of the enclosed account for 12 months' subscription to The Clay-Worker. I am always glad to receive your journal every month and I consider one number well worth the enclosed amount. Wishing you and your valuable paper every success,

Yours faithfully,

ALFRED HOPPING.

Wooton Pillings, England, May 8, 1906.

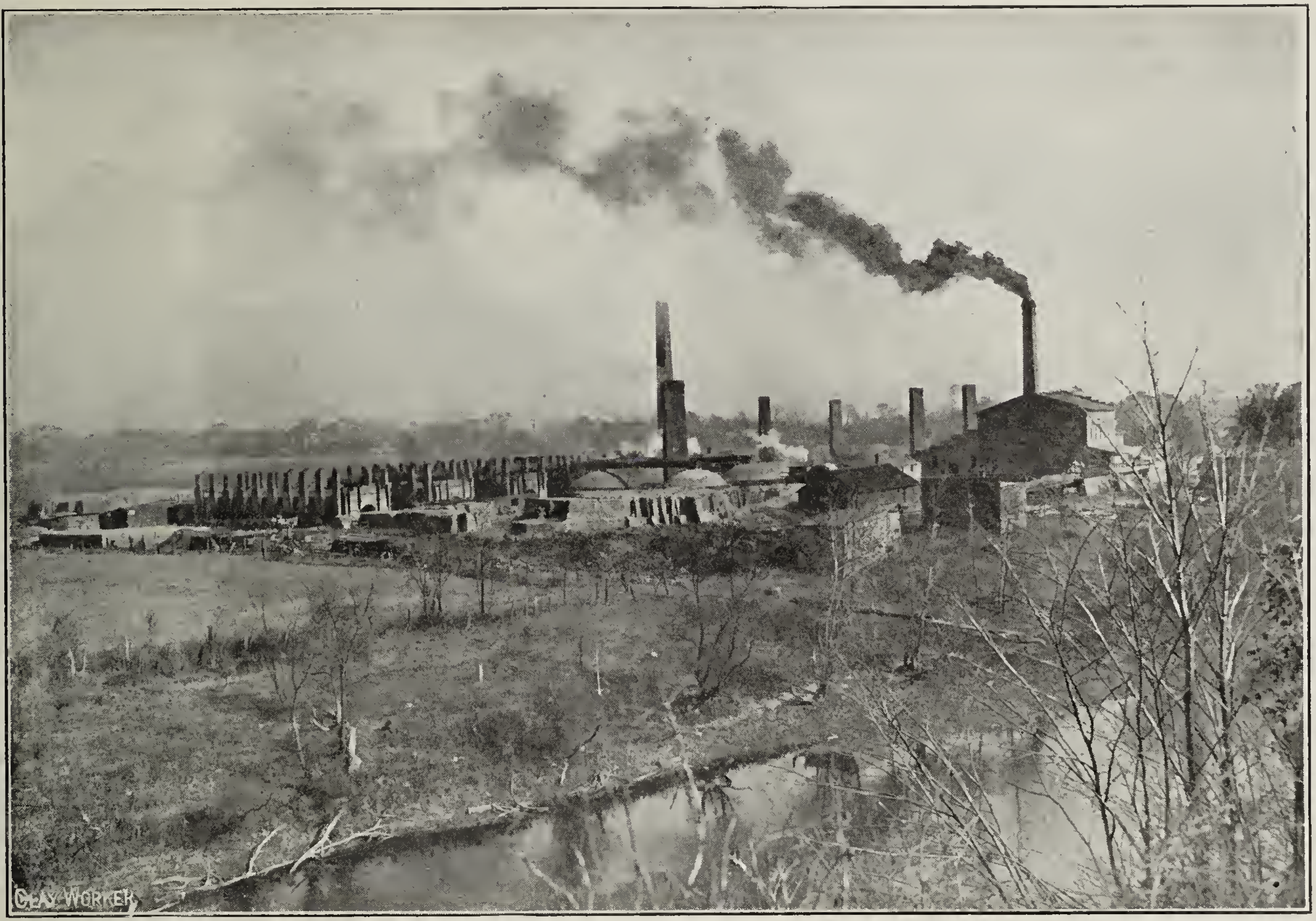
It is very likely that none of us is anywhere near as great as we think we are, but there is some consolation left for us in the fact that most of us are a decided improvement on what our neighbors think we are.

Written for THE CLAY-WORKER.

THE PLANT OF THE BARR CLAY CO.

ONE of the most prosperous manufacturing plants of Streator and one which will interest brickmakers is the brick factory of the Barr Clay Co., located about two miles south of the city.

After a general view of a strange brick plant the first thing a visitor wishes to see is the clay-pit. To do this at the Barr Clay Co.'s works it is necessary to cross a river. However, no boat is needed, for a substantial bridge of brick and steel, wide enough for a double track for clay cars, spans the river and furnishes communication, between the clay-pit and the factory, that is hard to surpass. The shale pit, which is shown in the very excellent illustration, is a very interesting place for one who is interested in brick and their manufacture. A deposit of forty-five feet of good paving brick shale is underlaid by four feet of coal and overlaid by six or eight feet of clay and soil. Working at the same time and within a few yards of each other one sees three different methods of excavation, each best adapted to the particular material in which it is used. On the surface deposit are men washing the dirt off with water which is pumped from the river; in the shale a large steam shovel is digging and loading the shale, while on the lower level, men are at work with pick and shovel taking out the coal. Certainly an unusual sight—to see formations of such different nature and separated, perhaps, by many thousand years, all being worked within so small a compass and each one worked by a different method. As one looks on a sight of this kind and contemplates the opportunities for originality of method; for turning a worthless deposit into a useful article of commerce; for success or failure he begins to understand why it is that the brickmaker is inspired by something more than the profit he can make from his business.



General View of the Plant of the Barr Clay Company, Streator, Ill

The cars loaded with shale or coal are drawn to a high point at the head of the bridge, from which point they run by gravity to the dry pan room or the boiler house, as the case may be. The empty cars are drawn back by the same hoist, and when they reach the high point, run by gravity, to the stêam shovel or the coal bank. All spotting and switching of cars is done from this one point. The coal mined is of a very good quality, and beside furnishing fuel for the boilers, is used to burn brick.

The factory building is built of brick. The boiler house and engine room are located in the factory building, but are separated from each other and from the machine room by brick walls. With the exception of the represses, all the machinery is driven directly from the main line shaft, and it is a pleasure to note that no attempt has been made to economize by using small belts and pulleys, these being of ample width and diameter for the duties they have to perform. Three dry pans grind the shale, which is then elevated to a Perfect clay screen from which it falls into a bin located directly over the pug mill. An American Clay Machinery Company's brick machine and automatic cutter is used, and the greater part of the one hundred thousand brick it produces daily are repressed into brick or block for paving, and a repressed building brick which is set over the pavers, and when burned, takes a black color and a natural glaze.

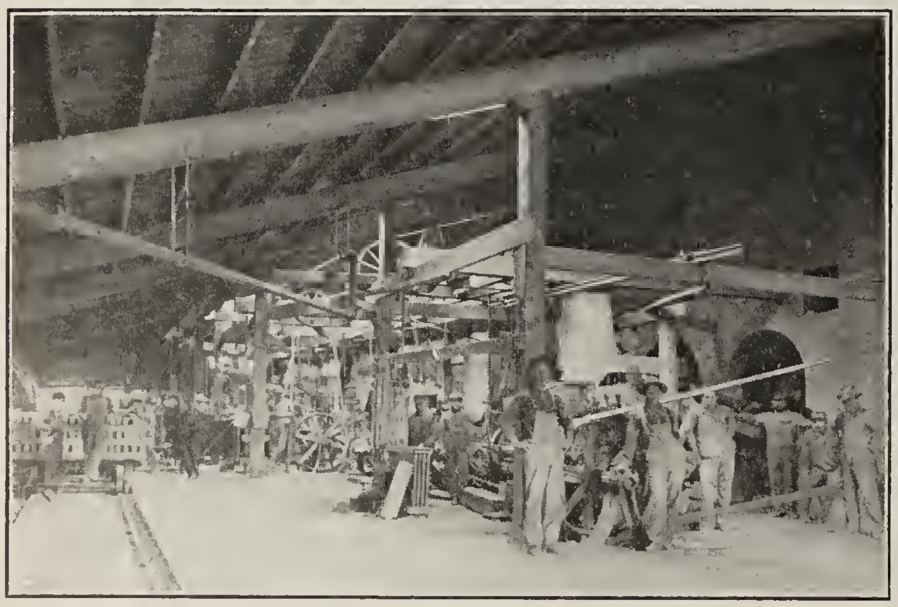
Two dry houses are used, one being heated by exhaust steam in the day and live steam at night, and the other by waste heat from the cooling kilns. In either dryer the brick are dried in about twenty-four hours' time. In connection with the waste heat dryer is an auxiliary furnace to be used in case of a shortage of cooling kilns. The heat from this furnace is drawn in by the fan and passes directly through the dryer. A direct connected fan collects the heat from the cooling kilns by means of an overhead iron tube which communicates with most of the kilns on the yard.

Six rectangular kilns, each holding one hundred and thirty thousand brick, and seventeen round kilns, each with a capacity of sixty thousand brick, are arranged with regard to the factory so that a minimum amount of work is expended in filling and drawing. The shale, which is of a sandy nature, is subjected to a very high heat; paving brick being burned in about eight days.

From such material as is found in the shale pit, and for such an equipment, one looks for a first-class product and is not disappointed. The brick are of fine shape and color and run uniformly excellent as to wearing qualities. Evidence of their nature may be had by looking at the picture of S. Vermilion St., Streator. The brick in this street are of the first paving brick made by the Barr Clay Co.; the street being paved in 1894, and as yet the brick show no sign of wear.

Switches from three railroads lead directly to the yard and give communication with two additional lines, which affords excellent shipping facilities.

A Glimpse of the Kilns of Barr Clay Company.



Stiff Mud Machine, Represses in Background.

The good and abundant shale, the substantial buildings, the excellent product and unexcelled shipping facilities leave the impression on the visitor that the Barr Clay Company has struck the happy combination of right place, right time, and right product. Y. E. O.

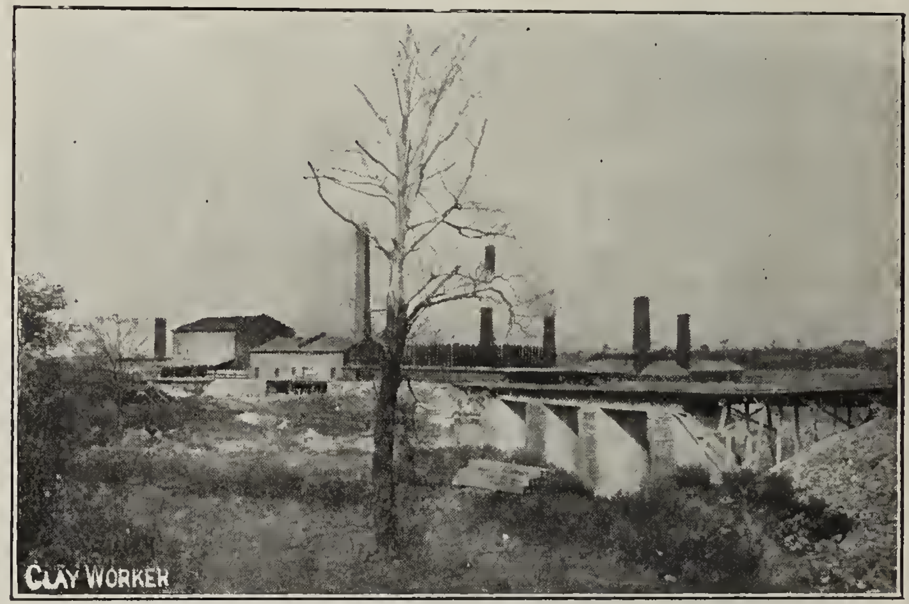
Another Fire Test on Sand Lime Brick.—The Royal Prussian material testing plant at Grosz-Lichterfelde has made another test on the fire-resisting qualities of sand-lime brick. The temperature obtained in the small test house ranged from 620 to 990 degrees centigrade, which cannot be considered very high. The results have shown that after a test lasting ten minutes sand-lime brick showed very bad cracks, but that after one hour's test the cracks did not increase.—Tonind. Z. No. 38, 1906.

BEAUTIES AND ADVANTAGES OF CEMENT HOMES.

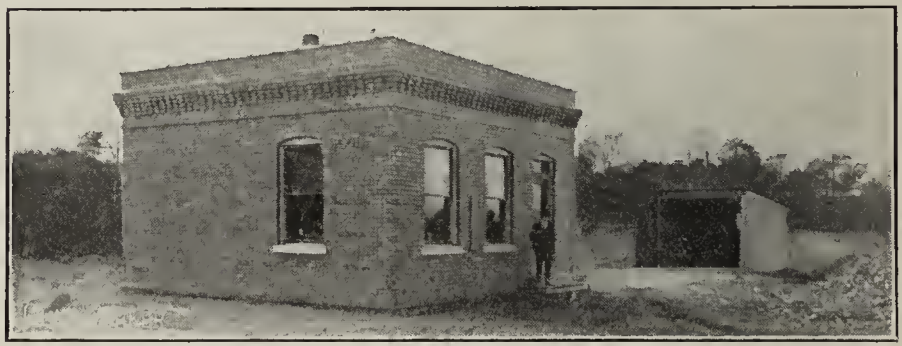
Observations of Professor Wigglestaff. From the New York "Evening Telegram."

WE ARE, after all is done and said, a home-loving people. We like to build ourselves a new house every now and then, and when we get all settled down we rather enjoy going around and trying to break up some other fellow's old one.

This, by the by, is the building season, but we are all mixed up as to what building material to use. When we first started out in life we used to build our homes out of air; then we used hot air and pressed brick. The bricks were all right, but nowadays it costs so much to keep them pressed and looking decent! Wood is just as bad. If you don't give it a fresh "makeup" of paint and powder every spring, the home gets wrinkles under the eyes and soon looks like a regular old hag.



Bridge Over River Connecting Plant and Shale Pit.



Factory Office Built of No. 1 Repressed Paving Blocks.

These conditions, then bring us down face to face with the concrete home age of cement, sand and cinders. Dugouts, cave cottages, cliff dwellings, etc., were all right in their day, but we are living in the "imitation stone age."

If you are not yet wise on the cement home scheme, why, mix right in now, before the ground floor hardens down. Just cut out that little old-fashioned vine-clad "cot" dream, with moss-covered shingles on it, and get down to "fake stone."

Imitation Stone Palaces are "It."

What you really need is an artificial stone palace with a concrete porch, inlaid with hand-made pearls and supported by reinforced Roman fluted cement columns, which are reproduced from the Vatican. The main floor should be done in box-pleated granite, with a suggestion of counterfeit gold running through it, and trimmed in bogus onyx. All the baths should be of second-story Grecian marble, and the bedsteads must be "carved" out of North Carolina flint, with Vermont cobblestone mattresses, which are as hard and natural as the real thing.

In the rear of the palace you need a real hand-me-down Italian garden, composed of Atlantic City sand, two parts of Portland cement, three parts of paris green gravel, and a bucket of Croton water, strained.

There is absolutely no limit to the molded-stone home. People who live in cement houses can throw all the stones they like. They are bombproof, fireproof and scandal-plated. Everything in the cement house, including yourself, your wife and children, dog and automobile, can burn up and still they say "these monolithic walls will stand intact." What more can the housekeeper ask for? When your friends come around to see the funeral of yourself and family you'll have the satisfaction of knowing that they said, "Well, he left a good home. He built it right when he did build."

Remember the Hand-Made Is Best.

You don't have to depend on union labor to build your modern cement home. Any child who knows how to make good old-fashioned mud pies can learn to make the latest style building blocks in ten minutes. While you are slaving away at the office and sending out your salary by a messenger boy, to lose in the poolrooms, your wife and children can be in the country making the building material for the new and enlarged home, which you hope to put up in the summer if your horse wins.

The Barr Clay Company's Shale Bank or Clay Pit.

They tell us that the Eskimo chops up snow blocks and his wife piles them into a snow house, but the Yankee cement-block house has the Eskimo house-building gag frozen to the North Pole.

The standard and unabridged recipe for making cement building blocks is thus: Get a small box of wet rocks or gravel. Pour in hot water until the box is full. Then pour the water off and measure it. This gives you "the relation of the voids to be filled by sand and cement." Some people then add a little salt and pepper and begin building at once. Others wait until the thaw comes.

You should be very careful about your proportions. The legal proportions are: One quart of cement, two cups of sand, four teaspoonfuls of broken stone, two granulated egg shells, a quarter of a pound of coffee grounds (if you want a coffee-colored house). Stir well, beat the composition into an insensible shape, being governed all the time, of course, by the architect's designs, and place in the sun in the back yard to dry and harden. If the sun never shines where you live, place in a stone dish and bake in a get-hot-quick oven.

Don't Be Stingy with Your Cement.

When you have enough building blocks on hand you can use them in many ways. They are good for small homes, office buildings, dams, to throw at cats, or almost anything. As yet they have not been used for building yachts, but for fence posts, tombstones, etc., they are great. You can have the tomb of the old Napoleon reproduced for your own use in "twenty thousand year guaranteed" concrete for $7.29. They will put it up anywhere on the map, even in Brooklyn, without extra charge. If you want a famous old castle of Europe reproduced in cement or reinforced concrete, it will be about $17.50. You see, one of the features of the cement home is the cheapness thereof.

Engineers have been discussing the problem of water. They are divided on how much water to use in their cement. We take ours plain. It seems to set better and we can use more of it at one time.

One of the most important parts of the exercise of building your own cement home is the "tamping." We don't know what this consists of, but we have given it serious consideration and have finally come to the wise conclusion that this part should be left to the wife. Otherwise she would not take so much interest in the home building.

While performing the mixing trick, preparatory to doing the block casting, be careful lest some of the domestic animals get near the mixing machine. A tomcat or chicken in bas-relief above your swell window or front door would not add to the home decorations.

Enjoy Your Exclusive Home.

One of the nice things about a cement home is its strong resemblance to the mausoleums of the rich, in the society cemeteries. There is another satisfaction in putting up a cement house: If you get yours first, it will be the only one on the street. When your neighbors who are thinking of building see it, they will stick to frame or brick.

When your friends call in the summer time they will say, "Oh! What a nice, cool, 'damp' home you have." But in the winter time you can get even with them on that 'damp' remark. All you have to do is to start your fires, say in October, and by the following spring all the 2-foot-thick cement walls will be heated through and through and every room will be as warm as toast. Should we have another civil war you might be able to rent your stone jail to the Government for a fort.

This country hasn't been destroyed many times by earthquakes since cement came in, but the Engineers' Guesswork Magazine gives it out as official that any ordinary earthquake would get tired before it shook down a cement cottage. As for the cement skyscraper, they say an earthquake or cyclone would go around another way rather than tackle a modern cement office building or hotel.

TOAD IN A BRICK—A QUEER TALE.

One day last month the clerk of works of the new manual instruction center in Queen's Road, Southend, London, saw something strange protruding out of the end of an ordinary stock brick, and, on closer examination, found it was a toad, which had the appearance of having been petrified. The toad, which was a full-sized one, must have been in the clay when the brick was made, or embedded itself there after the making and before the brick was burnt. In the burning the toad had become as hard as iron, and, when tapped, had a ring about it as of metal, and it was not in the least shrivelled. The shape remained perfect, the lines of the back and the mouth were as clear as ever, and the eyes were perceptible. The brick is being forwarded to the British Museum.—Exchange.

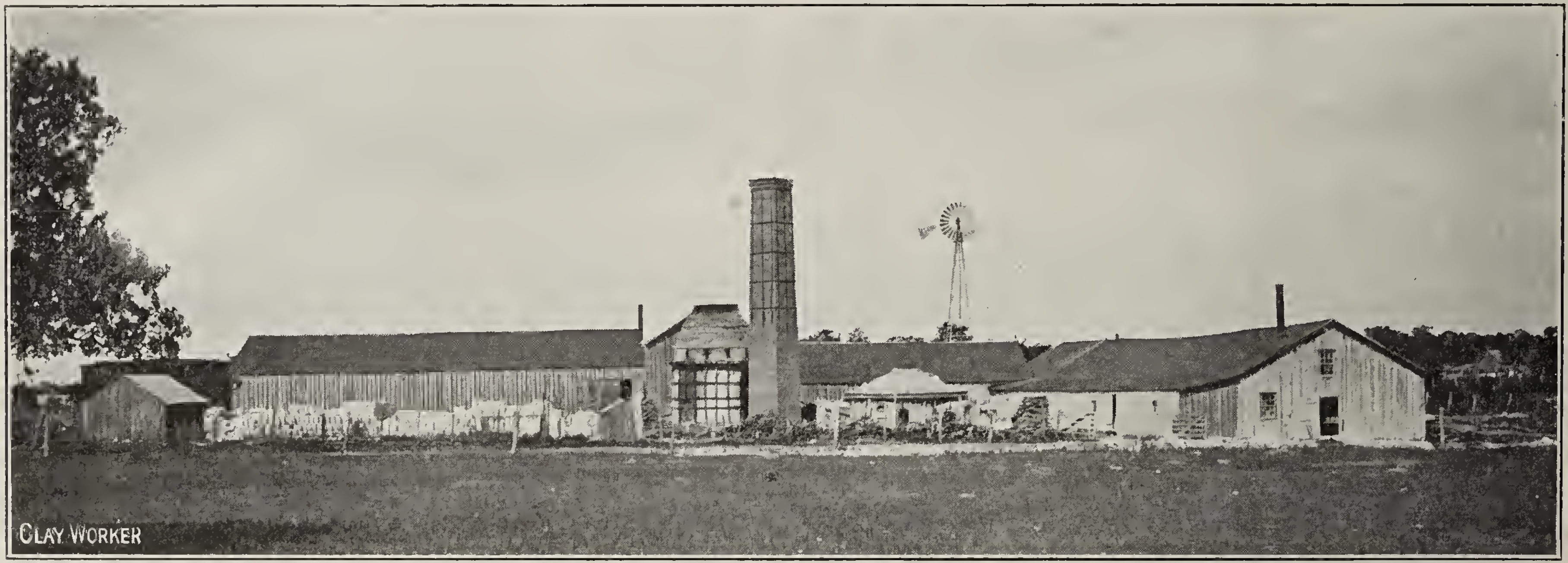
Written for The Clay-Worker:

THE McDADE POTTERY.

Where Charcoal Furnaces Are Made.

McDADE is a small station, thirty-seven miles east of Austin, on the Houston & Texas Central railroad. Its only manufacturing interest, so far as I know, is the pottery located there. On account of the excellent fire-clays of this vicinity, this pottery employs about twenty-five men, and manufactures jugs and churns, crocks, flower-pots and charcoal furnaces. It is for the furnaces the McDade pottery is notable. These are unique in design, and have a reputation in Texas and the neighboring States, in fact, wherever charcoal furnaces are used, for their superiority.

It may not be generally known, outside of the Southwest, how useful an article a charcoal furnace is. It is quite possible that many of my readers have never seen one; yet few housekeepers in Texas or Louisiana would try to do without one, and all hardware dealers in that region carry them. Mr. R. N. Williams, superintendent of the McDade pottery, tells me he ships these useful articles to Colorado, Missouri, Arkansas, Mississippi, and even to Georgia; and this, in spite of pretty heavy freight charges, for they weigh about 25 lbs. each. He finds, however, that the reputation of his wares allows him to keep his prices steady; there are not many manufacturers of charcoal furnaces to compete with, and those that attempt to undersell him with a cheaper sort of furnace find that where the "Champion" is known. it is preferred. His trade in these useful articles has grown so rapidly that the making of jugs and other crockery has become secondary. The clay for his stone and earthen ware has to be brought from other beds—some from Athens; while the fire-clay for the furnaces is close at hand.



Birdseye View McDade (Texas) Pottery.

The plant is not a large one—two kilns, one up-draft and one down-draft, with a capacity of about 10,000 gallons a week. Another larger down-draft kiln is in course of construction, as Mr. Williams finds that for stoneware the down-draft kiln is emphatically better. The grinding of the clay is done in primitive fashion, by mules, just as sugar-cane is ground in South Georgia, on farms.

The churns and jugs are thrown on the wheel, too, in the primitive way that produces so much finer results than more rapid mechanical methods. Molds are used for the crocks, however, and the tops to jars.

The glaze used for the stoneware is a Bristol (felspar) glaze. The demand for jugs is so great, and so general, for miscellaneous purposes, that the pottery has great difficulty in filling orders from hardware and general merchandise stores, and makes no attempt to supply the whiskey dealers. It has only two potters for this work, with a molder for the crocks. The larger proportion of labor is busy with the furnaces.

These are made in six sizes, the largest being No. 1. They are clay buckets, with a false bottom, an iron jacket and a handle to lift them by, like a bucket. The false bottom is full of holes, and an opening beneath, on one side, supplies a draft. A charcoal fire in one of these convenient receptacles is exceedingly handy for the busy housekeeper, cook or washerwoman. It is economical, clean, quickly kindled. In hot weather one may prepare a light meal over the charcoal furnace, instead of kindling the kitchen fire, saving time and labor.

Clothes may be boiled and iron heated on the furnace more easily and cheaply than by any other means. It is for these purposes that the Southern housekeeper considers the furnace indispensable.

And this is the way these furnaces are made: The clay is first roughly molded into shape; the "false bottom," a disk full of holes the size of a nickel, is also made; and then one of the potters shapes the bucket on his wheel, smoothing it and fitting the "false bottom" in securely, and adding three clay projections to the inner rim to hold up the pot or kettle. Four potters were hard at work on this part of the work, and a great many furnaces lay drying, the day I visited the pottery.

Making McDade Charcoal Furnaces.

When dry they are fired, and then jackets of iron must be fitted to them by the smiths. Four or five of these were at work, too; carloads of sheet-iron are used now, where one or two rolls sufficed, a few years ago. The fitting and riveting of the jacket, and adjusting of handles done, the furnaces are passed on to a man who coats them with asphalt on the outside, to protect from rust.

The growth of Mr. Williams' establishment and the increasing demand for charcoal furnaces, not only in the States, but beyond its borders, suggests that other enterprising clay-workers might find it worth while to examine into this use of fire-clay. ETHEL HUTSON.

When we feel like we have earned the right to put on a few airs we should bear in mind that too much air sometimes begets an ill wind.

CHINESE POTTERY TOWN.

For at least 900 years the town of Chingtechen, in China, has been devoted to the making of pottery. Walter Cennell, a British consul, describes the place. He says that everything in Chingtechen belongs to the porcelain and earthenware industry. The houses are for the most part built of fragments of fireclay that were at one time part either of old kilns or of the fireclay covers in which the porcelain is stacked during firing. The river bank is for miles covered with a deep stratum of broken chinaware and chips of fireclay, and the greater part of the town and several square miles of the surrounding country are built over or composed of a similar deposit.

Stoneware Shipping Yard.

Chingtechen is unlike anything else in China. The forms, the color, the materials used in the buildings, the atmosphere are reminiscent of the poorer parts of a civilized industrial center. There are 104 large pottery kilns in town. The greater part are in use only for a short season in the summer. During this busy season the population of Chingtechen rises to about 400,000 souls, but of this total nearly half are laborers drawn from a wide area of country, who come for the season, live in rows of barrack-like sheds, and do not bring their families with them.

The Furnace—Shipping Room.

Visitors to Chingtechen pass along street after street where every shop is occupied by men, women and children all engaged in the designing, molding, painting or distributing of pottery. Potters' sheds, where the clay is mixed and molded on the wheel, are innumerable. The river bank is crowded for three miles by junks either landing material and fuel or shipping the finished product.

CLAYS AND CLAY INDUSTRIES OF ONTARIO.[*]

BY M. B. BAKER, PROFESSOR SCHOOL OF MINES,
KINGSTON, ONTARIO.

At your convention last year you had the pleasure of hearing an address from Prof. W. G. Miller, and you indicated that you would appreciate an examination and report on the clay industry of the province by the government. The matter was reported by Prof. Miller, and was taken up by the Bureau of Mines, and I was asked to take hold of the question. I spent the season visiting and examining brick yards, potteries and tile yards. As a result of that work, I have been asked by your secretary to read a paper on points collected in my summer's work. I might say that the results of my examination are now being put in shape for the Bureau of Mines report, and you will each be sent a copy of that when published.

In his address last year, Prof. Miller explained to you how clay is formed, viz., by the decomposition of a mineral called feldspar. This is the normal method for clay to form, and this would produce a pure clay, whose composition would be as follows:

SiO_2 46.5%, Alumina Al_2O_3 39.5%, and Water 14%

This pure clay is the kind found in places where nothing has interfered to remove or carry the clay from the place it was formed, i. e., from its original source. Unfortunately, however, this is seldom the case, for you all know that even the running water after a rain storm is quite dirty with the clay, sand, etc., which it is removing from its source on the hills to a resting place in the hollows; and this process alone will mix a certain amount of foreign material, sand for example, into the clay, and thereby change its composition, so that a bed of pure clay is not a common thing.

TABLE I.

Clay.	Locality.	SiO_2	Al_2O_3	Fe_2O_3	CaO MgO	Alkalies Na and K	Loss by Heat
Kaolin....	....	46.50	39.50	......	....	......	14.00
Blue Clay.	Stratford .	40.16	13.76	5.58	19.52	2.70	17.98
Blue Clay.	Delaware	41.40	12.54	4.88	20.18	3.33	17.65
Blue Clay.	Alvinstone. ...	39.92	12.69	4.67	20.28	3.19	18.28
Blue Clay.	Paisley	40.14	15.04	4.56	19.57	2.67	18.51

In Canada pure clay or kaolin is practically unknown, for we have been visited by a much greater agent for removing material than ordinary rainwater. About the time of man's appearance on the earth, or perhaps a little before it, North America was visited by a great period of glacial action. The glaciers came from the Arctic regions, and passing south and southwest had a tremendous grinding and scouring action on the rock surface of the country over which they passed Many of you have probably noticed the bare rocks in places, how they are polished off and ground; if not, look for it next time you come to a bare, rocky area. The rocks were therefore ground off to a great depth, even our hardest granites are polished and smoothened like so much putty. We can see then that any deposits of kaolin were swept away with ground-up rocks, sand, gravel, etc., and all became a mixed mass. This collection today forms the great thickness of agricultural land we have in the more southerly parts of Ontario, while in the north we have usually bare, rocky hills, with little or no soil covering.

We see now why our clays are so variable in composition and are so often mixed with sand, gravel and boulders. Our clay is really then a great mass of ground-up rock, and instead of having the composition of pure clay has quite a different one, as shown in Table I.

Here we see samples of blue clay taken from quite different parts of this province, and still we see what a remarkably similar composition they have. On the other hand, I give in Table II an analysis of three clays taken from one bank at depths of 1, 3 and 5 feet, respectively:

We see then that even in one bank, especially when sandy, we can have quite different clays in a very few feet.

From what has been said above, I think you will see that our Ontario clays are necessarily of a mixed character, and that they owe their origin to one great geological process, acting over the whole of the province.

We have now discussed briefly how our clays were formed in Ontario, but we have not as yet had a definition of clay itself. It goes without saying that every one of you knows what clay is to see it, but it is a question if you could so define clay to one who had never seen it that he would recognize the substance. Clay is an earthy material, which becomes plastic when moistened and can then be molded into any shape, which is retained when dried; furthermore, when heated it fuses to a pasty mass, which, when cooled, has a rock-like consistency.

This definition gives us a full description of what clay really is, and we see its chief characteristic is that when heated its fine particles fuse and knit to one another, so that when it cools we have a solid rock-like mass. This is the chief secret of brick, tile and pottery making. Of course, other things are necessary in the preparation of the clay, etc., but the strength of the goods depends upon how completely the particles knit to one another.

Having now dealt in a general way with the method of formation of our clays, I wish to discuss the clays themselves a little. In traveling over the province I find three classes of clay in use for the manufacture of brick. In the first place, we have at the surface of the ground a reddish brown clay, which, when burned, yields a red brick; this is the clay used in the ordinary red brick yards of the province. It is usually from 1½ to 3 feet in depth, and it has usually the composition shown in Table III.

Below the red top clay is always found a yellowish gray clay, which a little deeper passes into typical blue clay. This blue clay is often very stony or "gingery," and is then often called "hard pan." It is used largely now in manufacture of white brick and tile. It has the composition of No. 2 above. Notice the high percentage of lime—about three times the percentage of Fe_2O_3. This lime counteracts the effect of the iron, and makes its brick turn buff instead of red, and notice also the great amount of volatile matter driven off by heat. This is largely H_2O and CO_2 driven from CaO_3 of the clay, as in a lime kiln.

TABLE II.

Sandy Clay	SiO_2	Al_2O_3	Fe_2O_3	CaO MgO	Alkalies Na and K	Loss by Heat.	Burns
1 Foot Down	61.08	17.28	6.20	4.89	5.2	5.19	Red
3 Feet Down..	51.92	14.65	4.12	13.81	4.73	11.34	While
5 Feet Down..	51.30	9.80	3.70	17.45	3.91	13.88	White

TABLE III.

Clay.	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Na and K	SiO_2	Loss by heat.
No. 1, Red Top..	65.06	14.15	4.67	2.36	2.18	4.14	.32	6.76
No. 2, Blue Clay	40.16	13.76	5.58	15.74	3.78	2.70	.17	17.48
No. 3, Saujeen..	63.00	15.15	6.28	3.48	2.67	5.95	.30	3.63

We have still a third clay, which is found only in the northern part of the province. It is found north of a line running roughly from Walkerton, extending through Hanover and Bracebridge to Pembroke. North of this line we find a later clay, which shows a remarkable banded structure, being composed of alternate bands rarely over ¾-inch thick of reddish brown clay and grayish sand, and in some cases bands of gray marl. This section is often 20 feet deep, and when wedged off in masses and pugged so that the clay and sand are thoroughly mixed, it yields a splendid clay for red brick and tile. Its analysis is No. 3 above.

We see how closely it resembles No. 1, being high in silica from the sand it contains, and high in iron and low in lime, which therefore allows it to burn red. In working with our Ontario clays one can always determine this point by putting a drop of acid of any kind (vinegar will do) on the clay. If the clay effervesces or bubbles up, it indicates abundance of lime or calcium carbonate, and the clay will burn to white or buff brick. If, on the other hand, the clay does not bubble up, it is practically free from lime and will burn to red brick.

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[*] A paper read before the Fourth Annual Convention of the Ontario Clay Product Manufacturers.

Having now described briefly the three classes of clay used in Ontario, I would like to discuss a few points noticed in the working of the different clays. Let us consider first the red top clay, or No. 1, as given above. This is the general red top surface clay used for making red brick over the greater part of the province. This is a splendid clay as regards color, and, as most of you know, it burns to a fine hard red brick when properly burned. Unfortunately, however, this clay often contains small pebbles of limestone, or "ginger," as the brick men call it. These pieces, however small, if not removed by some means, will burn to lime, and after the goods are made a little moisture causes the lime to swell up or slake, and the brick or tile is bursted or small scales are broken off. A great many of you know this difficulty, for I find few yards free from it.

Treatment of Clays in Which There are Lime Pebbles.

A great many devices have been tried to rid the clay of these stones. The commonest of these is crushing by a pair of rolls, but if the rolls are to have any appreciable capacity they must be set so far apart that pieces of the size of a pea escape uncrushed. These small pieces are scattered throughout the clay, and although they are rarely large enough to burst a brick open, yet wherever they are near the surface of a brick they cause a small scale to break off. Consequently we see that while this method improves the brick, it does not overcome the difficulty by any means. The injury caused by these small pieces can be considerably lessened by adding a part of a shovelfull of common salt to the last two or three fires when finishing a kiln. This will not glaze the tile, as the heat is not sufficient to fuse the ware, and without the fusing, we cannot glaze. This method is used in a few yards in Ontario, and the goods produced are of excellent quality. If lime is present to any marked extent, however, this method will not completely counteract it.

Another device used for the removal of the stones from clay is the Bechtel Disintegrator, a machine made and patented by your worthy past president, but this machine requires that the clay be dry, and this drying of the red clay is not an easy task for most of the yards in Ontario, as most of them are located in hollows, since the red clay is thickest there. When the clay is dry, however, this machine works admirably. It removes the stones by centrifugal motion, and at the same time it pulverizes the clay to a fine grain, when it can be thoroughly pugged and tempered before going to the brick machine.

A Simple Method of Washing Clay.

The only method applicable to the undried clay seems to be that so commonly used in the old countries, viz.: to wash the clay. I found this method in use in one yard in Ontario, and the proprietor told me he could wash the clay for 50 cents per thousand, and had no trouble in getting $1.00 per M. more for the brick made from that clay than from the unwashed clay from the same yard.

The washing is done in the fall, after brick making has closed for the season. The clay is dug and put into a circular pit about 3 feet deep and 15 feet diameter; a horse travels around this pit and on the beam, which is pivoted in the center of the pit, two drags are hung; the clay is thoroughly wet, and the horse swings the beam round and round; the drags, which are like a small harrow, mix the water and clay to a slurry; all stones sink to the bottom, and the slurry is run off through a side gate to a flat, where it drains itself and is ready for the next season's work. This is a very cheap and excellent way of removing the stone, and the brick made from this washed clay were the best I saw in the province for evenness of grain and color and freedom from checks.

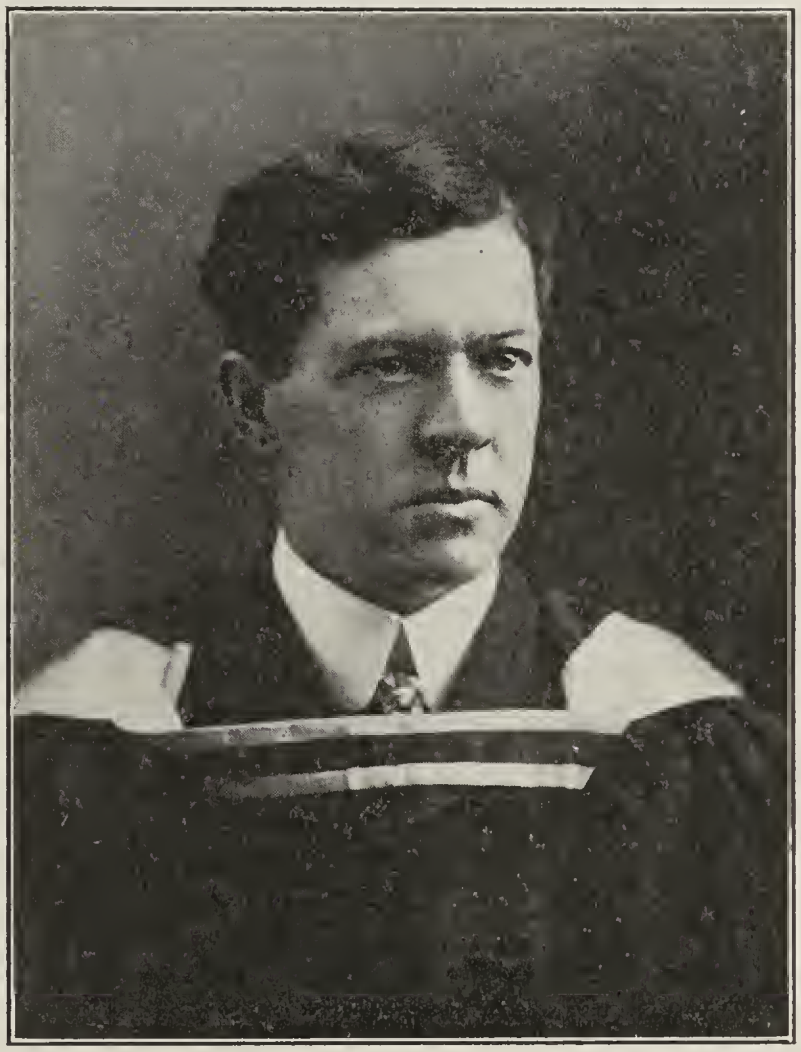
All that I have said as regards the removal of stone from the red top clay will apply equally well to the blue clay, No. 2, lying below it, and used in the manufacture of white brick and tile throughout Ontario.

The third class of clay, i. e., the finely laminated clay described as No. 3 above, is free from stones and needs nothing but pugging to fit it for the machines.

There are very few in the province who are giving their clay sufficient pugging or mixing, and this is where the bricks are made, the machine only molds them. The man who tempers the clay really makes the brick. In this connection I would suggest that more sand be used. The ordinary clay of Ontario will stand one-fourth its bulk of sand for brick making, and this will improve the goods in many ways. True, a few brick makers in the province are adding sand to their clay, but most of them use only what sand is already in the clay brick. I know that in many cases sand is too far away to be hauled and used in the clay, but I found a great many men with sand available, but who were afraid to use it. The addition of sand to strong clay up to one-fourth its bulk, i. e., 1 of sand to 3 of clay, will have many advantages. It lessens the shrinkage, both in drying and burning. It hastens the drying by making the brick less compact It aids the burning for the same reason. It causes the brick to retain their shape better in drying, by giving the green brick more body. It makes the brick much more easily shifted for those using the soft mud process, and has other advantages. Brick should not be made from a fat or strong clay alone. It is almost impossible to dry or burn such brick without finding them very much cracked and checked; sand should, therefore, be used when available. I see by last year's report of proceedings that Mr. Fox advocated a more extended use of grogs, and I heartily endorse all he said on that subject.

Another point in connection with the manufacture of these clays that I would like to make a few remarks upon is the burning. I do not for a moment claim to be able to solve all the difficulties of this important part of brick making. I said above that the temperer really makes the brick. I would have done better to say that the temperer and the kiln man make the brick, for a poor burner can spoil the best of clay.

First, then, let us discuss the fuels. A great deal has been said about this subject, and the question is commonly asked by brick makers, "Which do you find cheaper to burn—wood or coal?" Now, Mr. President, that all depends on the kind of wood and coal burned. Unfortunately, the majority of brick makers get all the old, rotten and punky wood of the neighborhood, or that which won't sell other places is usually brought to the brick yard, and because a cord of such wood sells cheaper than good solid wood it looks like a bargain. This is a very great mistake. The brick maker should buy as good wood as he can get, and especially dry wood, for each 10 per cent. of moisture in wood detracts 12 per cent. from its heating value, and as ordinary air-dried wood, i. e., wood piled out in the yard for a year, contains 25 per cent of H_2O. we see that 30 per cent. of your heat value is used up in drying this moisture off before you get any of it to burn brick with. This loss, you will remember, is in dry wood—how much the more loss when wet, punky wood is used?



Prof. M. B. Baker.

Another point, which is not generally known to all, is that in the matter of wood fuel, one kind of dry wood has the same heating value as another kind, weight for weight, i. e., 1 pound of dry pine has the same heating value as 1 pound of dry hickory or maple.

Since we do not buy wood by the pound, we must get other comparisons, so I will give you some relations of wood to soft coal. Taking air-dried wood:

1 cord hickory or maple weighs 4500 lbs. and equals 1800 lbs. soft coal.

1 cord white oak weighs 3850 lbs. and equals 1540 lbs. soft coal.

1 cord beech or red oak weighs 3250 lbs. and equals 1300 lbs. soft coal.
1 cord poplar or elm weighs 2350 lbs. and equals 940 lbs. soft coal.
1 cord pine weighs 2000 lbs. and equals 800 lbs. soft coal.

From the above you will see that 1 pound of soft coal is equal to about 2½ pounds of any kind of dry wood, and, pound for pound, one wood is as good as another if dry. Again, 1 cord of maple is worth 2¼ cords of pine and a cord of pine is about as good as a cord of elm, etc. Other comparisons are obvious.

From these figures you can each decide for yourself which is best for you to use, as coal and wood are rarely the same price at any two places. However, from the fact that a cord of dry hard maple or hickory is not equal to a ton of soft coal, which rarely costs over $3.50 a ton, I would say that coal in most cases is the cheaper fuel to use, and, moreover, coal takes less yard room and less handling.

Another point in the question of fuel is that it takes the same amount of fuel to burn your brick, whether you rush the fire or take time to it. To burn ordinary brick a temperature of 1850 degrees F. is required, and to reach this temperature over the whole kiln requires a certain amount of fuel, and it makes no difference whether you rush the fire or give it more time. It goes without saying that you must not let a fire drag on and on or you could burn all the wood in the yard. But when the water smoke is off, do not rush the fire too much to get the "heat up," for it takes the same fuel to get that 1850 degrees F. whether you raise it gradually or rush it, and many a kiln of brick is ruined by this too rapid heating up. The brick have not time to expand gradually with the increase of temperature, and they therefore pull themselves apart and crack, check, or shake, as it is commonly called. I found on my travels that those brick makers who were burning coal got better results to water-smoke with wood, of course, and then heat up with wood for 4 to 6 hours before going onto coal at all. When wood is scarce, the water-smoking and heating up can be done with coke with good results, and then go onto coal as usual.

Another point I wish to touch on is "flashing." In reading the report of proceedings of your last meeting, I see that you had considerable discussion on this subject, and that your president had to leave the matter as unsatisfactorily answered.

The Discoloration of Brick in Burning.

In visiting the yards this summer, especially those burning white goods, I found this flashing to be a serious trouble, and I have studied it and read all I could on the subject, which, unfortunately, is not very much. I have concluded from all that I have seen that the trouble occurs in the "cooling off" stage in brick making from our Ontario clays; other things may cause it in other countries, chiefly the different compositions of their clays.

The trouble, as most of you know, is most often seen in white brick, and consists of red flashes, or streaks, on white brick or tile. It is due to some compound of iron in the ferric state. Now to explain that statement:

Iron has the power of forming two classes of compounds, viz.: (1) ferr*ous* and (2) ferr*ic* compounds, e. g. Iron can combine with oxygen and form a compound FeO, i. e., 1 part of Fe to 1 part of O, and this is called ferr*ous* oxide. Or, again, it can combine with oxygen and form a compound Fe_2O_3, i. e., 1 part Fe to 1½ parts of O; this is known as ferr*ic* oxide. Thus the *ic* compositions are the higher compounds. Thus, we can see that if we keep the drafts open we get plenty of oxygen admitted, i. e., we have an oxidizing fire which will give us the more highly oxidized compounds or *ic* compounds. On the other hand, if we close the doors and mud them up, etc., we have a very scant supply of air or oxygen entering the kiln, so we get a reducing fire, which will yield *ous* compounds. Now let us consider the conditions that exist in a kiln of brick. You will remember that the blue clay, No. 2 above, from which white bricks are made, has as muuch iron oxide in it as the red clay has, viz., 5 per cent. or more. If this were burned to its higher or ferric state the bricks would be red, but the presence of so much lime prevents this, and we have ferrous compounds formed. The combination of ferrous carbonate and ferrous oxide, etc., gives us the buff color of these goods, and sometimes a greenish yellow color, which most of you have seen on those goods.

So we see that in making white brick or tile the iron is present as ferrous compounds, but if anything should happen by which an oxidizing action took place some of the ferr*ous* compounds would be changed to the ferr*ic* state, and we would have a red flash or streak. Let us follow the case now in more detail. A kiln of white goods is water-smoked, then heated up; when going well, the doors are closed for the most part, and often they are mudded up between firings, at any rate the supply of air is not abundant, and a series of ferrous compounds as oxides, carbonates and silicates result. When the firing is finished the kiln doors are closed up tight and no further air enters to speak of; this is proper, too, but what happens next? Heated air naturally rises, so the hot air and gases in the kiln rise and escape about the top of the kiln; cool air must then enter to take the place of what escapes, and it must get to the bottom of the kiln, so it passes down through the flues, and up through the floor of a down draft kiln or through the fire arches in an up-draft kiln; in either case it meets hot brick, and at once oxidizes the ferr*ous* compounds to the ferr*ic* state, and the result is a red flash of ferr*ic* oxide. This usually extends only for a few courses from the floor, for above that is reducing atmosphere, the oxygen having been used up below.

You naturally ask, How is this to be overcome? I can only answer: Find some way of preventing air from entering the kiln while the brick are still hot. To do this, close up the flues as well as the fire places, by dampers or otherwise, till the kiln has cooled somewhat, say a day and a half or two days. Then the bricks will not oxidize if cooled more quickly after that.

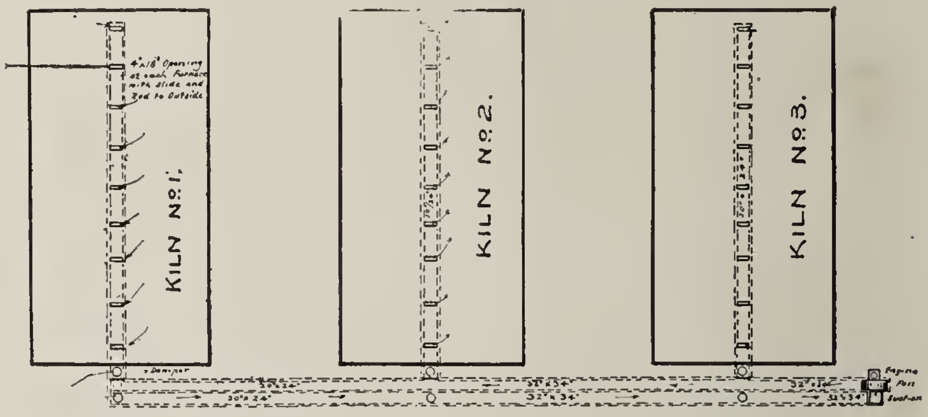
For red brick just the reverse takes place; allow air to enter, so that a reducing atmosphere will not be formed in the kiln which would reduce the red ferric oxide to the light yellow ferrous state, producing white or yellowish flashes on your brick. Of course, you must not overdo this and allow so much cold air to enter as to "shake" the brick by chilling them.

Do not mistake the white effervescence or "soda" which so often collects on brick after they are built in a wall for the same thing as a white fire flash. This so-called soda is not the same at all, but is a soluble salt soaked out of the brick and later on evaporation coats them with the salt that was in solution. I have analyzed this and found it to be about pure $MgSO_4$, with a very little $Al_2(SO_4)3$ and is caused by a chemical combination of the MgO of the clay with SO_2 from the coal, so that men making red brick especially should be particular to get coal as free from S as possible. It can be overcome by adding a Barium salt BaC_2 or $BaCO_3$ to the raw clay or shale. When $BaSO_4$ is formed in preference to $MgSO_4$, and this is not soluble, so it cannot be brought to the surface of the brick to later coat them white.

Now, Mr. President, I think I have finished. I might have added something on kilns, and the relative merits of the different kilns—up-draft and down-draft and continuous kilns—but I have already trespassed on your time, so I will leave this subject for someone else.

WASTE HEAT DRYING.

The accompanying cut shows one of the many layouts of waste heat dryers, as installed by the New York Blower Company, of Chicago, Ill. This plan was made for a water smoking outfit of a small dry press brick plant. There were three square up-draft permanent kilns. An underground brick duct was built in the center of each kiln. An opening was provided opposite each furnace with damper, which later could be operated from outside by an iron handle. A double underground duct was run along one end of the kilns; the one nearest the kilns was connected with the discharge of the fan and used for blast duct. The other duct was connected with the fan inlet and was used for the suction duct.



The blast duct was connected to cross ducts under kilns by the usual sheet iron dampers, while the suction duct was connected through manholes and a movable cross-over pipe. The heat from any cooling kiln can be blown, by this arrangement, to any of the other two kilns. The cut shows No. 1 kiln cooling, and the heat is blown to N. 2 kiln. A special built 90", ¾ housing bottom horizontal fan was used with a direct connected vertical engine, with water jacketed bearing.

The outfit has proved itself highly successful, and paid for itself the first season. Of course, every brick plant has to be treated differently, and any parties either wishing to install a new dryer, or to remodel their old one, will do well to take the matter up with the New York Blower people and let them make an estimate and plan. They will do this without cost to prospective customers. Address New York Blower Company, 25th Place and Stewart Ave., Chicago, Ill.

Royal Meiszen Porcelain Factory.—The financial situation of this well known pottery was made a point of debate in the House of Representatives of Saxony this spring. The total expenditures for the year were estimated to be 1,315,000 marks, while the gross receipts are estimated to amount to 1,486,000 marks. The pottery has been making some money ever since 1900, when big changes in the management of the institution were made. In 1905 the profits amounted to 226,000 marks. After a very animated debate, the budget was passed.—Deut. Topf. and Z. Z. No 18, 1906.

Roller Screen Crusher.—A new roller crusher provided with screen plates has recently been put on the market by Paul Bauer, Brugg, Switzerland. This crusher has a big advantage over the solid rollers in that the crushed material is screened at the same time and increases the output of the rollers. In place of making solid rollers, the rollers are cast with spider webs on which steel screen plates are fastened. The adjustment of the roller is made by springs and screws and the capacity of these improved machines is much larger than the dry pans.—Deut. Topf. and Z. Z. No. 14, 1906.

Kiln Foundations and Dampness.—Mr. Ed. Poth describes kiln foundations and the different ways necessary to prevent kiln dampness. The best remedy for dampness in kiln foundations is proper drainage. The use of asphalt and other isolating materials is also practiced. The dampness in flues not only retards the proper firing of the kilns, but it creates steam which affects the burning of the products and often spoils the whole contents of a kiln. The longer a kiln has been in use the less will dampness occur, and it has been found for that reason that old kilns are better than new ones. Where water has been found in foundation at eight feet or less, such ground is not suitable for kiln purposes. By continuous kilns we will have to be still more careful than by round kiln on account of the longer distance the steam, thus created, has to travel.—Tonind. Z. No. 19, 1906.

Dry Pressed Brick in Germany.—In reply to a question if there are many dry pressed brick plants in that country, it was stated that there are comparatively few such plants in operation. The German pressed brick are very good, but the German architects object to the very uniform color in such bricks, as they are designing their plans more and more in polychrome color scheme. They prefer, therefore, the stiff mud brick. It was also stated that the dry pressed brick did not stand the frost as well when they are softer burned as the stiff mud brick. It takes higher heat to burn dry pressed brick to the same color and hardness than stiff mud brick of the same clay. The difference in operation between a dry pressed brick and a stiff mud brick plant is not sufficient to make that process popular with our German friends.—Tonind. Z. No. 39, 1906.

Fire Insurance in Ceramic Industries.—The German Association of Ceramic Manufacturers has just published a bulletin in regard to fire insurance of the different factories in the clay industry. It is shown that the regular fire insurance companies charge a very high rate and that their business is very profitable. The association had demanded a reduction in the premiums, but instead the insurance companies have increased the same. It is also pointed out that the ceramic factories are being built every year more fire proof and that the risk is therefore greatly lessened. It should only be natural that the premiums should be reduced proportionately. The manufacturers of the clayworking industries have therefore decided to form a co-operative fire insurance company and the plans for this scheme are now being worked out.—Keram. Rundschau, No. 13, 1906.

Sand-Lime Brick Factories Abroad and at Home.—In regard to the number of sand-lime brick plants we find the following data compiled in a German paper. Germany counts fifty per cent. of the plants of the world, while the United States has one-third of the whole amount.

Germany has in operation	208 plants
United States of America........	130 plants
Holland	13 plants
Sweden	8 plants
Denmark	7 plants
Great Britain	7 plants
France	6 plants
Austria-Hungary	4 plants
Russia	4 plants

Chili and Italy each three plants, Belgium, Portugal and Spain each two plants, while China, Brazil, Roumania and Switzerland each has one plant, which makes a grand total of 404 plants in the world.

The table may not be exactly correct, but it is intended to give the clayworkers an idea as to the extent of this new industry. The annual production is estimated to be twelve to sixteen hundred million brick, of which Germany is making about one-half of that quantity.—Tonind. Z. No. 38, 1906.

The Action of the Blueing of Clays.—The practice which we find in many countries in Europe to reduce a red burning clay by absolute reduction to a blue one has not found much favor in this country. In answer to a question as to what technical or chemical changes take place in this process, we find the following data. A clay, low in iron, is not as suitable for that purpose as one high in iron. The blueing is only a reduction process, and glowing carbon acts as reducing agent in the fire, which is obtained, first, by the use of heavy residium, tar, or juniper trees; and, secondly, by the total closing of all air inlets by the process of blueing. It is also a complete reduction of the fire. The reduction takes place with the oxide of iron which the clay contains, and the oxygen of the same is partly or completely taken up by the reduction. In the first place we obtain ferrous oxide and in the second place metallic iron. Using a chemical formula we get:

$$Fe_2O_3+C=2\,FeO+CO$$
$$Fe_2O_3+C_3=Fe_2+3\,CO$$

From which we draw the conclusions that a clay which contains a high percentage of iron oxide is better for blueing than one which is low in iron. In a continuous kiln it is not possible to obtain a complete air inlet closing, which would give a complete reduction of the fire, because the process in continuous kilns is a uninterrupted one. It is, therefore, not posible to obtain a first class blue product from such kilns, and the best kilns for blueing are the individual kilns with downdraft arrangements.—*Tonind. Z. No. 137. 1905.*

Written for The Clay-Worker.

BRICKMAKING IN THE PELICAN STATE.

THE SALMEN BRICK and Lumber Co., of Slidell, La., had one of the most prosperous years of its history in its business in 1905.

Situated as it is, this company enjoys many advantages over the average brick manufacturer. Their kilns are located with double side-tracks from the N. O. & N. E. R. R., and also within one hundred feet of the canal, where the bricks are loaded into barges and pulled with the company's tug boats to the company's wharves in New Orleans. Thus they have reduced the cost of placing their product on the market to a minimum.

On a plant of this size it is interesting to know just how they handle the clay during the various stages of manufacture.

In the clay pit they have a steam shovel with a capacity of furnishing clay for 150,000 brick per day. The bank varies from six to eight feet faces. A dinky engine pulling ten cars, holding two yards each, carries the clay to the foot of an incline, where one car at a time is attached to a cable and pulled by a heavy friction hoist up over all the clay preparing machines. They use twenty cars. The engine, after leaving the loose cars, gets the ten empties standing on the side track and carries them to the pit to be loaded. As each car is hoisted and unloaded it is let down on the track for empty cars, and in this manner the operation is continuous and with the least amount of delay and switching. There is always some fixing and straightening up to do around the steam shovel, and this can be done while the engine runs to foot of incline and back.

A Snapshot of Salmen Brothers' Lumber Yard.

From the cars the clay is dumped into a bin and fed through a heavy duty disintegrator into a large heavy-built granulator, serving the double purpose of feeding and pugging mill. This machine discharges into the brick machine. The machine is one of Chamber's side-cut No. 8, and the entire stiff-mud plant is equipped with machinery from the factory of the well-known Philadelphia concern, Chambers Brothers Company.

Mr. Fritz Salmen, the manager, is one of the best known brickmakers in the South, and also one of the most popular. One has only to stop off at Slidell to realize the truth of this assertion. Nothing pleases him more than to show a fellow brickmaker around his plant, and he certainly has something to show, and is justly proud.

Mr. Salmen says he only made 100,000 per day during 1905, but he has since enlarged his dryer capacity and he expects to make the Chicago brickmakers "look to their laurels."

They have ten kilns holding from 800,000 to 1,000,000 each. They are up-draft patterns and are remodeled Morrison kilns. A peculiarity of this Louisiana clay is that in burning instead of having a "settle" this clay "swells." The walls of the kiln have to be heavily timbered to prevent the brick from pushing them down.

This company also makes one of the best dry press brick produced in the lower Mississippi valley. They harvest their clay during the pretty weather and store it in large sheds and allow it to air and dry. When in the proper condition it is run through a Chamber's dry pan and into a Boyd dry press. They make 20,000 per day. They burn the dry press brick in same kilns as the common brick.

While the fever was a hard blow to the State of Louisiana, you never hear a word of complaint. Those people are too busy building and remodeling and preparing to take care of their increasing trade.

The prosperity of the large concern is only one of the many indications of the wonderful advancement now going on all over the South in every line of trade. Dixie.

Gathering Clay with a Marion Steam Shovel.

Weather-Resisting Qualities of Roofing Tiles.—At the annual convention of the roofing tile manufacturers of Germany, Mr. Schmullius read a paper in connection with the proposition which was brought up last year to get standard tests in regard to the quality of roofing tiles. He referred especially to tiles made from shale which are not burnt to a close dense body, and which show good weather-resisting qualities. He showed that tiles with ten per cent. absorption when laid on the roof did prove excellent, while when tested with the new regulation would barely pass examination. That the resisting qualities of a roofing tile depend upon its quality to absorb water, is a wrong idea. Old hand made tile which were made in 1720, and which were taken from a roof in 1905, did not show any signs of weathering. These tiles had been on the roof over 185 years, and are considered soft burned tiles. In comparison to tile made today from the same shale as these were formerly made of, and which were burned by cone 011-010, these old tile were certainly not burned any harder than a cone of 014. It is also certain that this tile had absorbed in these years enough water to bring out its weathering qualities, and as the tile which were recently made from the same shale do not show to compare favorably with the standard tests, it is conclusive that these tests are not satisfactory. In his opinion the most satisfactory tests were the ones which were conducted with freezing tests, and he warned all tile manufacturers not to put any material on the market which could not stand these freezing tests.—Thonwaaren Fabrikant, No. 8, 1906.

Written for THE CLAY-WORKER.

NEW YORK AND THE EAST.

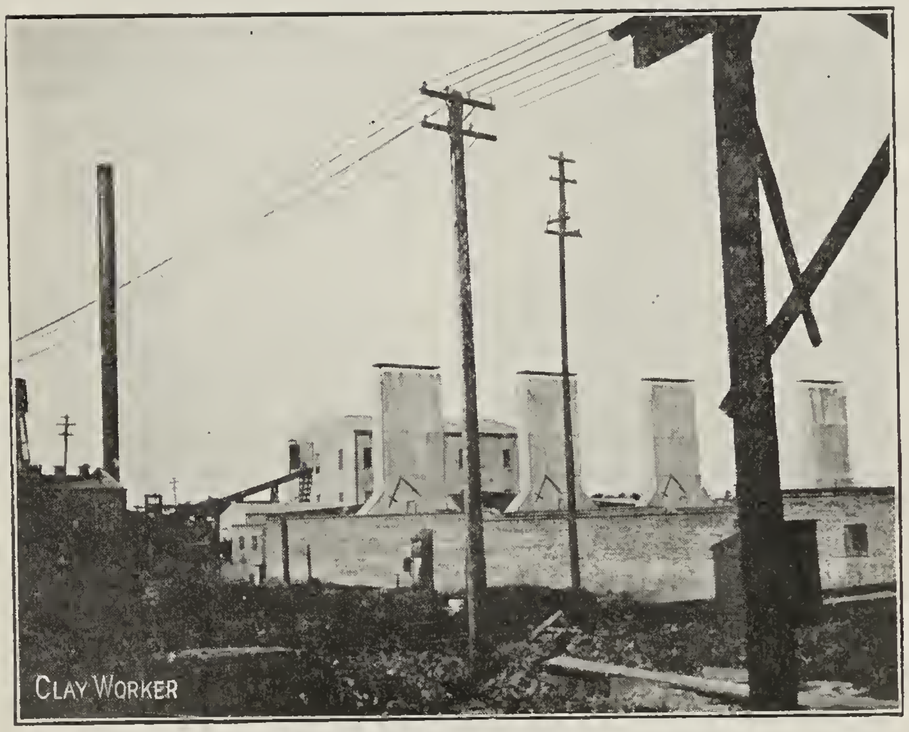
NOTWITHSTANDING the predictions of various pessimistic individuals, the brick market throughout the East continues fully as good as it has been at this season for many years, and there is every indication that it will keep that way for some time to come, at least until the present supplies of brick are exhausted. The situation has not improved from the buyers' standpoint since last month, and in some degree it is less favorable. There is a scarcity all through the eastern yards and not until the first burnings are ready for delivery will the shortage be overcome. The New York market was never better at this season and some are disposed to think that it was never as good. The situation there is one of acute search for sufficient brick to keep going until the next burnings can come down the Hudson or the Hackensack. The market is firm as quoted, with an upward tendency upon the most wanted grades. Prices now are: For cargo lots delivered on cars, New York, as follows: Front buffs, No. 1, $28.00; grays, shaded and speckled, $28.00; white, No. 1, $30.00; Hudson river common, $10.50 to $11.00; Hackensack river common, $10.00 to $11.00; light, hard, $9.00 to $9.50; pale, $8.00.

The Salmen Plant, Kilns in Background.

Boston dealers say that brick are scarce and some manufacturers say that prices will be higher before they are lower. There is a difference of opinion upon this point which only time can determine, but of the scarcity, there is no question. There is plenty of demand for everything that comes to the Boston market and the outlook is even more promising than the present, since building operations have barely begun. For common S. S. brick, delivered on the job, some makers are supplying their old customers at $10.00, but transient and new customers cannot obtain stock at that price, so they say. Buyers say they would be glad to pay a dollar or more higher for prompt delivery, if makers would guarantee it, but that they will not do. Sellers are not ready to say that they will produce the stock at a certain time. They can't always get it themselves. Here and there a man says a seller has accepted less than $10.00, but some are inclined to take such statements with a grain of salt. Prices now are: For New Hampshire culled W. S. brick delivered, $14.50 to $15.50; light hard, $9.00; Philadelphia face, $24.00 on cars at Boston; fire brick range from $28.00 to $35.00.

Biddeford, Me., has a new brick industry under the name of the Biddeford Brick Company. The buildings are now being erected and will be ready for use by the time it is the proper season for working there. Maine had an unprecedented demand for brick all last season and through the winter. Building operations are going to be larger this season than ever before. In fact, according to information received from there, development in Maine promises to be much more liberal during the next few years than it has been in the past, and contracts for buildings already let are sufficient to warrant the belief that brickmakers will be pursued with prosperity for the next few years.

The Lowe Brick Company has been incorporated at New Platz, N. J., with a capital stock of $40,000. The incorporators are F. Lowe, F. J. LeFevredo and P. Mullen, all of that town. It is said that a new plant will be built as soon as arrangements can be perfected.



A Portion of Salmen's Steam Dryers.

The plant of the Kiesel Fire Brick Company, of Rochester, N. Y., was burned last month, together with all its equipment. The loss was $12,000 and the insurance $6,000. It is understood that it will be rebuilt.

N. C. L. Kackelmacher, president of the Columbus and Hocking Valley Coal and Iron Company, has been in New York a part of the time during the last month completing the organization of a brick company which is to be capitalized at $1,000,000. The entire amount of capital required has been underwritten and ground will be broken for the new plant at Hocking Valley within a short time. The new plant will be fitted with every modern device for increasing the output, improving the quality and reducing the cost of manufacture and the capacity will be 500,000 brick a day. No further details are known, but there is an understanding that this is to be the best plant in the country, if Mr. Kackelmacher can have his way. Immense beds of clay are reported available at the site chosen for the works, according to one assertion they are practically inexhaustible.

An interesting development of possible paving sentiment is in progress in Holyoke, Mass. The Board of Public Works does not like the way the concrete pavement has been acting. Consequently, it has sent committees to other cities to make a study of the paving question. It seems that brick suits the committees bests, but it is thought that it will be impossible to secure consent for the laying of much brick paving in Holyoke, at least for this spring. Some brick paving in Holyoke has done well, but other experiments have not been as satisfactory and that has its influence in the decision which is about to arise. Nevertheless, there is a growing sentiment in favor of brick and within a short time it will be possible to secure liberal appropriations for that particular paving, provided the matter is followed up.

The strike which was feared on the Hudson river has occurred and has been settled. It began April 30. It lasted less than a week, but was fairly exciting while in progress. The strikers procured pistols and rifles, mounted guard upon the hills around about the plants, particularly at Coeyman's, and proceeded to make it extremely interesting for anyone who ventured in sight at the plants. One man was dangerously wounded and many of the strikers suffered more or less bruised heads as a result of collisions with the police, but aside from these minor casualties no serious damage was done. After two or three days of this the manufacturers yielded and granted all requests excepting recognition of the union. The pay is raised and there are some minor concessions which were granted, but recognition of the union was refused. The men all went back to work May 20. The fight was not as serious, nor as prolonged, as manufacturers anticipated. It lasted, all told, about three weeks, and the losses were considerable, owing to the fact that it is now harvest time for those who get their brick to market early. The strikers chose this time, well knowing the situation in which manufacturers found themselves. The increase in wages affects every employe about the yards and upon the boats and docks. Now it is over, manufacturers will rush their work harder than ever.

A curious aftermath of the Hudson river strike has developed within the past few days. The workmen have discovered that there is a law in New York that the men can work legally only ten hours a day in the yards. They assert that they have worked twelve, fourteen and sixteen hours, and now 5,000 suits are to be brought against the employers for pay for overtime. This is all done at the instigation of the Brick, Tile and Terra Cotter Workers' Union in all the yards along the Hudson. The suit will be watched with interest. Manufacturers do not appear to be greatly frightened at the possibility of such a series of suits.

At Carlstadt, N. J., the North Jersey Brick Company has been making some extensive changes. The old Walsh patent dryer has been torn out, a yard established, and, with considerable additional clay stripped, the outlook for increased business is promising. The new yards are thoroughly equipped. The pug mill is run by electricity and electric lights are provided to light the works by night in case of necessity. This company has a side track through its burning sheds, which enables it to ship brick all winter, something not possible with any other plant in Bergen county, New Jersey.

Several of the yards along the Hackensack have already shipped a small burning to market. There has been a brisk call for brick ever since the little snow that fell has gone. Schooners are numerous, getting brick to market, and the demand is larger than the supply. Sales are increasing, too, which shows that there is still something to be done in the way of developing the business.

M. and M. L. Gardner, of Hackensak, have been making some extensive improvements about their plant. While they haven't a particularly large plant, still they work it to excellent advantage and the yearly output is steadily increased. One burning has already been shipped this spring and another is being prepared rapidly, while the prospects for still further orders are promising. BURTON.

Written for THE CLAY-WORKER:

MAINE IS BOOMING FROM END TO END AS IT NEVER BOOMED BEFORE.

NEVER IN THE HISTORY of the State of Maine has opportunity pounded upon the door of the brickmaker without response. Everywhere, from north to south, from east to west, in every city, village and hamlet throughout the State of Maine, the sound of the hammer can be heard—and this regardless of the fact that the entire output from the brickyards of Maine has already been consumed. In many places the introduction of reinforced cement is taking the place of the old-fashioned cellar, but as the people of the State are as yet uneducated in this manner of construction there appears to be a decided favor towards the brick, if it can be procured.

Lumber has taken boom after boom, until it has now reached the price of from $30 to $60 per thousand, and some of the so-called lumber carrying that price would have been discarded ten years ago as "scotts." Of course, this continual draft upon the forests for a number of years has necessarily enhanced the value of the wood, which, under the conditions, is scarce in some locations for brick-burning purposes.

Some of the little towns are growing with such rapid strides that it causes the local residents to wonder "from whence and why this increase." It would be useless to attempt to enumerate the multiplicity of new industries which are finding their way into this State.

The use of brick as a building material has increased in favor during the last twenty years, and this fact, in connection with the wonderful development already referred to and the growth of the cities and towns, resulted in the demand for brick within the cities where they are most used, greater than can be supplied. As a consequence the manufacture of brick is considered an imortant industry in some small cities where clay is of superior quality.

It seems that people who have a large capital and who are eager to sink it in a hole in the ground in some far-off Western wilderness should be willing to unite their strength and wealth in the establishment of several "up-to-date" brick plants in the State of Maine upon some of those valuable clay deposits which have been bestowed upon the Maine people by Nature.

At Saco, Me., two large brick manufactories are known to contractors and builders all over New England. One of these is operated by Marston & Durgin, whose capacity has been 200,500,000 to about 200,000 feet of land tile, having incorporated under the name of The Saco Brick Company, of which Lewis B. Stillman, of Providence, R. I., is president, with the idea of quadrupling their output. Their product in the past was shipped to Boston, Providence, Bangor and other New England cities. Even with this proposed increase they will be unable to fill the orders for this year; and the company, under such management, proposes to keep abreast the times, to discontinue the land drain tile and devote their entire energy to the manufacture of brick. Their deposit is inexhaustible, and many new experiments in regard to the manufacture of fine ornamental work, as well as the ordinary red brick, may be expected.

When the managers of the proposed brick trust were looking out for the important plants of New England they put upon their list the brick yards of Mr. Gray, located on the Saco river, just below the city, as one of the large and important plants which they thought advisable to take into the proposed trust. This is one of the best-equipped plants of its size in New England and has a capcity of turning out 5,000,000 brick a year. For several years past the yards have been making their full capacity. Mr. Gray makes but one kind of brick—the common building brick—but he makes them so satisfactory that he has, up to this year, when building operations slacked, had all he could do to meet the demand for them for the past seventeen years. When he took possession of his present plant it had a capacity of but 500,000. He gradually increased the capacity until it became ten times that amount, or 5,000,000, where it stands to-day. He has two brick machines and a fifty-horse-power steam plant, and drying sheds which are 450 feet long and 200 feet wide. These sheds are of a substantial, open character, covering 112,500 feet of ground surface, giving a drying capacity of 5,000,000. From forty to forty-five hands are employed when the works are in full operation, and the greatest amount of economy of time and labor is obtained by an excellent system of work. As to the whole plant, one may venture to say that there is not a neater conducted one of its kind in the country. The product is shipped chiefly to Boston by water, and boats are loaded right at the yard, the brick being passed from the kiln to the boats without transfer.

Having had nearly forty years' experience in brickmaking, it is needless to say that he knows the business thoroughly.

At Lewiston, on the Auburn side, are the yards of Charles Dunn, A. H. Brooks, George Duchaine and Horace Libby, who keep fairly up to the local market, filling an occasional order on the outside.

H. A. Morrill, of Pittsfield, Me., veteran brickmaker, has closed out his yard, which is located at the base of one of the finest clay deposits of New England, and offered his plant for sale, but as yet with no takers. This yard has successfully operated for more than twenty years under his supervision, and since he stopped, two years ago, there has been nearly 3,000,000 of brick shipped into the town and placed in the brick walls of the new buildings under construction, within a stone's throw, some of them, from his machine. It seems strange that the brickmaking spirit has faded away. The contractors in this town are trying to find a man to take the work where Mr. Morrill left off. It is an opportunity.

Brewer, once the banner brick town of New England, has sold its entire product, and a wooden building covered with sheet iron, made in imitation of brick, is the first sight that greets the visitor's eye as he enters the town. Clay enough of the finest quality and wood at a reasonable figure, yet brick are not in a sufficient number to even supply the local demand. And a vessel of 200,000 is unloading brick into Brewer.

It is enough to remind one of the saying of the old treadtender who, after various attempts at keeping the machine full and finding himself somewhat tired from the strain, looked out at the strikers who cried for mud. "Mud, mud," said Kelly, "mud. I will work no more till I see the boss," and with that the boss lost Kelly and there was no more mud, consequently no brick. So it is with Brewer—mud, but no brick.

William Burke, who is now the recognized leader in the brick business in that section, has purchased all the brick on the De Ocean shore and, strange as it may seem, these brick will be shipped by vessel and be dumped on the wharves of Brewer, to be used there. In the deserted brick yards of Brewer the clay was taken from which the bricks were made which built and formed the principal streets and buildings of Boston. It has been estimated that this wharf where they will be loaded has had for more than fifty years in succession no less than 500,000 bricks per year pass from it en route for Boston, Philadelphia and the West Indies. These same clay banks, excelled by none on earth, are lying bare, only needing the origination of capital sufficient to operate improved brick-yard methods.

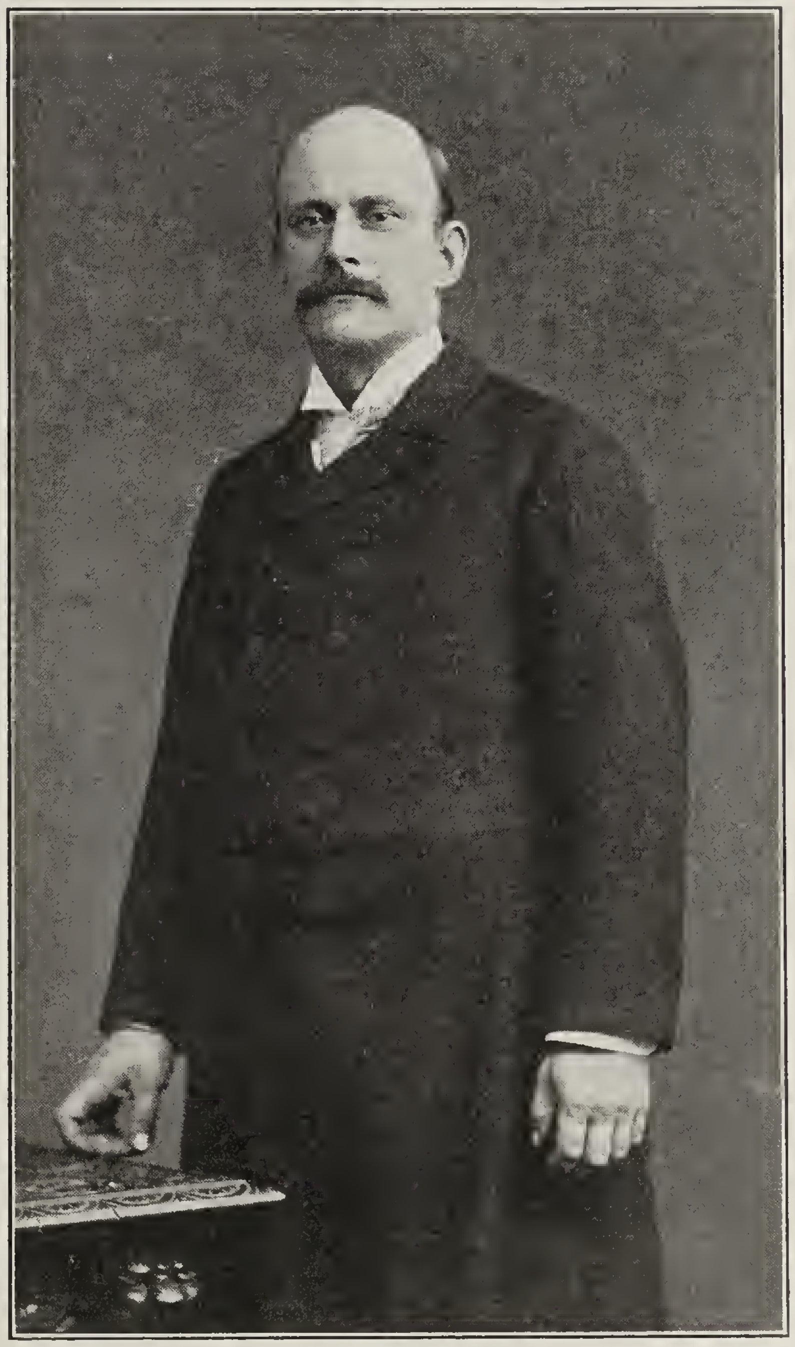
Arthur Gould's yard, in Presque Isle, in North Aroostook county, made about 1,500,000, which was about one-half enough to supply the local demand in that section. The remainder came from New Brunswick, across the line.

At Houlton, Me., the larger part of the brick used came over the line in Canada, subject to duty.

At New Limerick, Me., Joel Clark made nearly a million, which were consumed as fast as the small kilns could be burned.

At Bald Hill Cove the old brick yard, long deserted, will be opened up this year by Frank Young, of Winterport. Mr. Young proposes to use the old-fashioned mud machine and will make about 1,500 brick.

The Hannah Bros., at West Sullivan, will run two small brick yards this year. Mr. F. E. Patten will make about the same amount as last year.

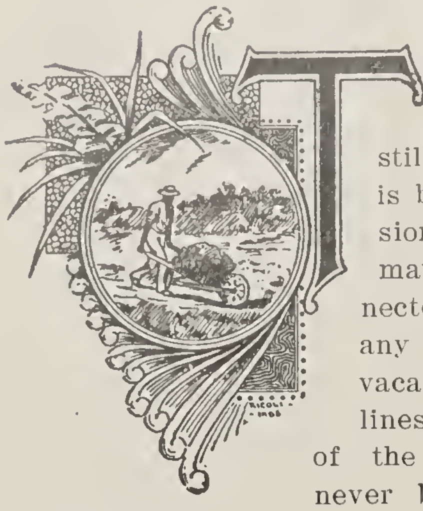


L. B. Stillman, Providence, R. I., President Saco Brick Co.

The yards in Ellsworth, Me., are practically shut down. The town seemed for years to have a curse upon it on account of a few men owning the entire town. This seems to have been somewhat removed now, as the construction of a large dam above the falls will soon be in progress for the purpose of causing a back flow of water to generate electricity, which will be used in running and operating power for all the towns and villages from Bar Harbor to Bluehill, in Hancock county. This is an opening for bricks. Hosea B. Phillips seems to control the clay in this vicinity.

Written for The Clay-Worker:

THE CHICAGO SITUATION.



THE HAPPY DAYS of June are here. The hot days of July are rapidly approaching, and the still more sizzling weather of August is brought forcibly to mind by occasional premature foretastes. But no material dealer, and few men connected with the building industry, in any way, is beginning to think about vacation. Lawyers, salesmen in other lines, and office men, may be thinking of the new-fangled baits, rods that never break, reels that never become tangled, cool pools, reedy lakeshores, or tumultuous little trout streams, but none of this is for the brick man.

With buildings going up all over the city, mails bringing queries for quotations and information from contractors all over the country, with architects and contractors running around loose with ideas by the score that need working out by the brick and tile and terra cotta man—the man with the goods, it would be worse than treason to think of doing aught else than pass the summer poring over plans, pencil in hand, making estimates.

Indeed, with the mercantile fish biting so well, no trout-stocked stream could prove an attraction. Angling with the much-chewed pencil for fine fat contracts, with the bait of an attractive quotation, is just about the most attractive sport Chicago men of the trade can imagine.

For the local trade, the building permits tell the story. During the month of May, Chicago was again well to the front in this respect. According to the figures compiled for Construction News, Chicago ranked third in number of building permits issued, with 1,035, and third in estimated total cost of buildings for which permits were sought. The estimated cost for May, 1906, totaled $6,252,720, as against $3,813,710 for the same month of 1905.

Comparison of these figures with those of the largest eastern cities, notably New York city, including Manhattan and the Bronx, has always showed in the past, and still shows that Chicago generally surpasses in number of buildings erected, the cost of the lesser number of structures in New York city invariably exceeeds, by several millions of dollars, the cost of construction of the greater number of buildings in the Western metropolis.

This has, of course, been due to two causes. First, Chicago is still a young city, and has not as yet learned fully the lesson of building once and for all time—the lesson of putting in the best, regardless of cost. In the second place, Chicago has an enormous area to spread in, and the buildings are therefore smaller, with thousands more individual, or nearly individual, homes of an unpretentious and not costly type.

The change, however, has set in. The increasingly rapid change in the character of office and mercantile buildings in the down-town district was noted in the Chicago letter, published in the last issue of the Clay-Worker, and the prospects for a costly hotel of rather eastern type, in point of luxury and expense, as an annex to the present Auditorium Annex, in Michigan avenue, were discussed. Now, as a result of negotiations just completed, Chicago is assured of boasting the finest hotel in the country—a hotel which is expected to cost at least $5,000,000, and eclipse New York city's finest hostelry. Construction of it is to be started next fall, on Otto Young's property, in Michigan avenue, between Hubbard and Peck Places, south of the proposed location and south of the proposed site of the proposed sumptuous addition to the Congress Hotel Company's group, at Congress street.

The structure, plans for which have been drawn by D. H. Burnham & Co., will mark a new era in the Chicago hotel world. Nothing now existing in this city will compare with it for elegance. The building will have a frontage of 400 feet in Michigan avenue, and will occupy an entire block on that thoroughfare, extending back to the alley. It is to be twelve stories high and will have 1,200 rooms. The best painters in Europe and America will contribute to the decorations. The woodwork will be solid mahogany. The plans for the main entrance, on Michigan avenue, call for striking dimensions and elaborate carvings. Two floors of the building will be used exclusively for banquet halls. These suites will include a great hall which, it is said, will surpass Sherry's in New York. The hotel will also contain a magnificent ballroom. The management is to be connected with that of the St. Regis hotel, in New York city. All of the rooms will be "outside" and suites of great splendor are planned.

A large number of brick will have to be used in the construction of this hostelry, even though the entire front work is in stone. Terra cotta men and makers of fine front brick are hoping, however, that they may be given an opportunity to show the recent triumphs in their art wares.

While trade is fine in Chicago, many of the dealers here prefer the out-of-town clientage, on the ground that outside contractors know better what they want and are more prompt to pay than the run of city contractors.

"Give me the country business," said one prosperous dealer of years of experience. "There's lots of city business and it would be a crime to pass it up for sure, but the country business is the business with the least trouble connected with it. The country contractor always knows, to a hundred brick, how many he is going to need for a job and sometimes orders more than enough, in order to be sure of having all he needs. The builder in the country and the small city always figures his cost carefully and has the money right at hand before he lets the contract. He knows his contractor better than the average city builder and gets a man to do his work who will not underestimate at first, and then proceed to pry him loose from his bank account.

"In town we have this experience: A contractor calls us up and gets a price on one kind of face brick and asks us if we can let him have 10,000. We tell him we can, and deliver them. About two weeks later, we hear from him again, and he finds he is going to need 15,000 more. Only recently we had an order for 20,000 brick for an apartment building. We hadn't delivered half of those before the contractor found he was going to need 20,000 more. We hadn't been figuring on it, and we couldn't give him just that shade. So, at our own expense, we had to put in a course of stone, so as to grade the two shades of brick nicely. Before the fellow was through he had taken 60,000 front brick on the original order for 20,000.

"Then, again, a contractor will order his front brick and get his full order, get well started and find he has neglected to order octagonal brick to match. This means more joy for us, for in many instances we may have let the last octagonal that would match the contractor's particular shade of front brick, go—and there you are again. I don't know whether it makes people more foresighted and longheaded to live in the country or not, but I do know that it's a great relief to do business outside of Chicago."

The common brick war is still smoldering, although it is generally understood that an unstated armistice rules the day. In general both the leading companies now are reported to be selling at $6.00 a thousand. A few weeks ago, when the throat-cutting was still going merrily on, a report was suddenly sprung that the war had been ended, and the price of brick boosted again. This had the effect alleged to have been desired by the men who are said to have started the rumor, and stock went up a few points.

It's an ill wind that doesn't blow good in several directions, and the clayworking trades seem likely to profit from the recent criticisms of conditions in the packing houses at the stockyards. When the packers, several years ago, began to clean up the yards and make Packingtown as near a model abattoir community as possible, their first step was to pave the streets, alleys and pens with brick. Purington paving blocks made this part of the yards ideal. The condemnation of plank floors and the need of finding some material for floors and walls that will keep the rats out of meat storage rooms has caused Chief Sanitary Inspector Perry L. Hedrick, for the city, to recommend that brick or concrete floors and walls be put in at once in killing floors, gut and sausage rooms.

Scrip.

Written for The Clay-Worker:

THE MODERN SAND-LIME BRICK FACTORY

Of the Plant City (Florida) Granite Brick Company.

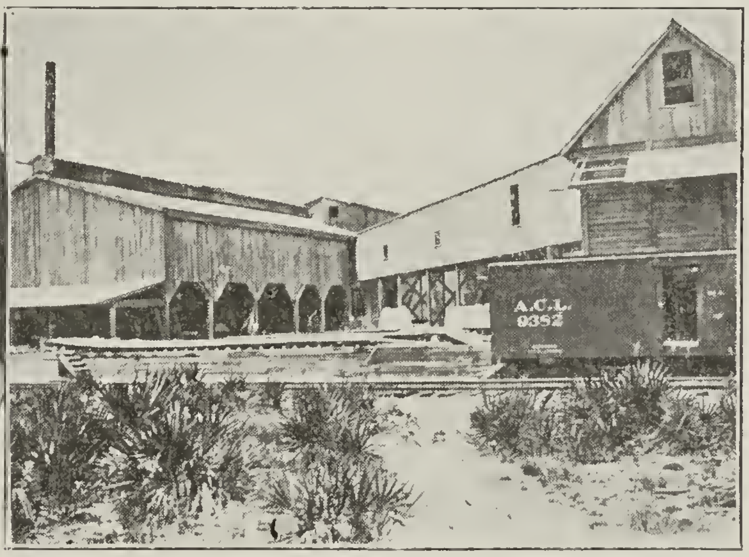
THE PLANT CITY Granite Brick Company was organized in 1905, under the laws of the State of Florida, and capitalized for $35,000. The officers, who were also reelected at the second annual meeting, on April 13, 1906, are Mr. I. V. Philips, president, Tampa; Mr. P. A. Merrin vice-president; Col. J. A. Young, treasurer and secretary, Plant City. Of the seven directors, four reside in Plant City, and constitute a "board of control," thus placing the affairs of the company, and particularly the factory, directly under the control of resident directors.

The factory is located about one and three-fourths miles from Plant City, on the Atlantic Coast Line railroad, which furnishes switching facilities and a sidetrack at the factory, which is located close to the railroad, partly upon the right-of-way of that concern. The sand supply is adjacent to the factory, and comprises forty acres of pine and palmetto scrub, which is covered with fine white sand to a depth of 25 to 30 feet.

The "system" employed and the presses used were furnished by the Ross-Keller Triple Pressure Brick Machine Company, of St. Louis, Mo. This company also furnished the entire machinery equipment of the factory, excepting the steam plant, which was purchased and installed by the Plant City Company, direct, a 72-inch by 16-foot horizontal, tubular boiler, and a 14-inch by 18-inch Erie engine, being duly provided, together with heater, duplex steam pump, inspirator, and the usual appliances and fittings.

Sand Pit, Plant City Brick Works.

J. F. Hobart.



A Glimpse of the Factory.

The machinery equipment consists of a 26-inch by 16-foot double-back-geared mixer, made by E. M. Freeze & Co., of Galion, Ohio, eight feet of the mixing length being devoted to dry mixing, the other eight feet doing wet mixing. A cone-hopper and double gate proportioning device, a Bartlett & Snow 48-inch by 20-foot, style E, dryer, capable of working either direct or indirect heat, five bucket elevators, two Ross-Keller presses, a Bartlett & Snow agitator over the presses, two 72-inch by 60-foot hardening cylinders, by Messrs. Struthers, Wells & Co.; three transfer cars, forty brick cars, and all inside factory trackage of 20-lb. steel rail.

A hydrator for the lime was supplied direct by the American Hydrating Company.

The lime is received in box-car bulk on the factory siding, and is shoveled directly into the boot of an elevator, which carries the lime to the top of a seven-car storage house. By the alternate arrangement of a chute, the lime may be either dropped upon a belt conveyor, or dropped into the storage house, as desired. When it is desired to use lime direct from the car, the chute above mentioned is so arranged that the lime falls from the bucket elevator directly upon the belt conveyor, by which the lime is carried 120 feet to a small sheet-iron lined bin, which holds sufficient lime for one day's run of the factory.

When it is desired to use lime from storage, the elevator leg may be opened at the level of the lime in storage house, and the required quantity of lime may be shoveled or scraped into the same elevator which transferred the lime from car to storage house.

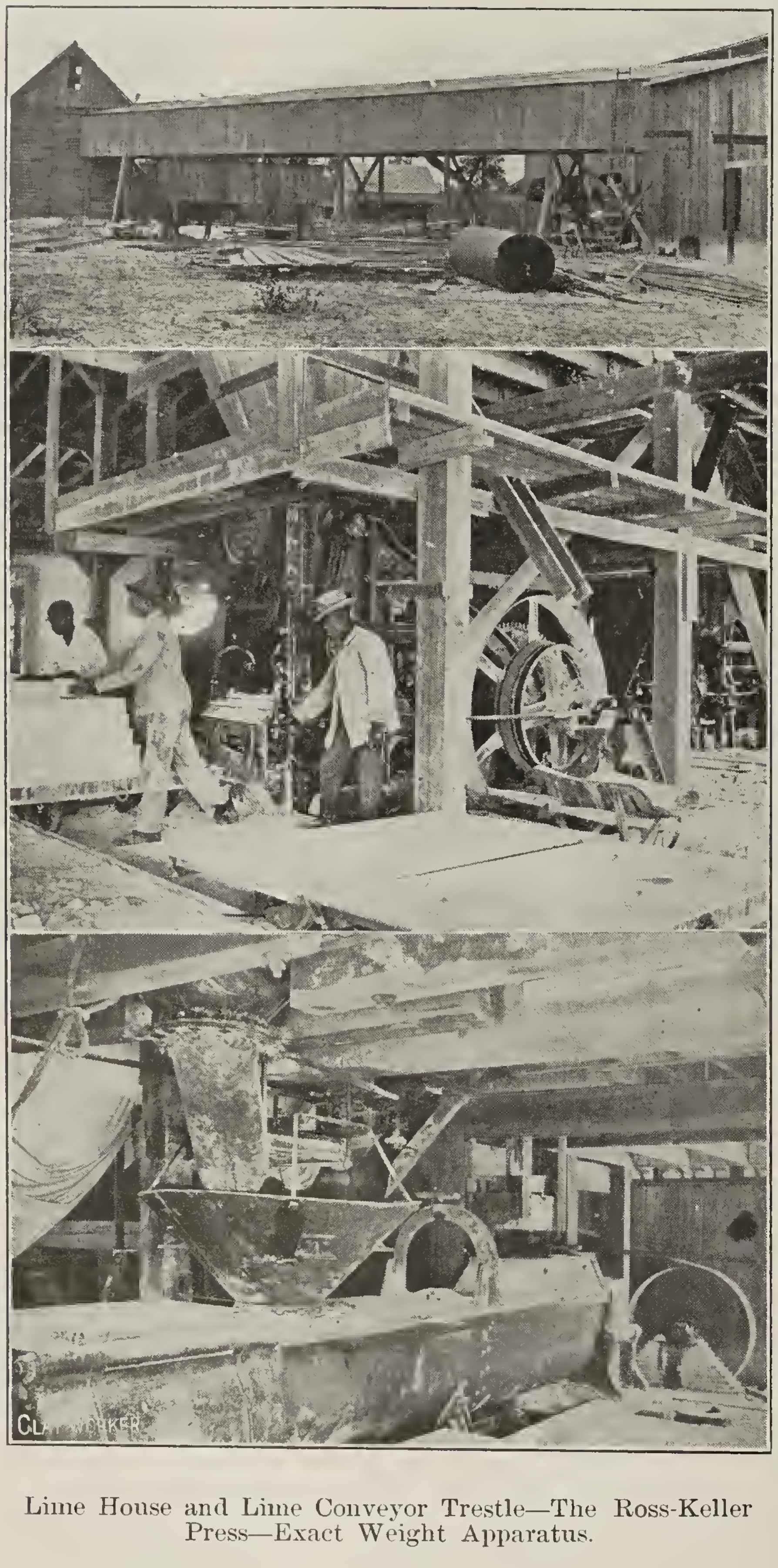
The conveyor, which conveys lime 120 feet, between storage house and factory, is of the Robins type, and the belt is 16 inches wide, running about 300 feet to the minute. The small storage hopper at delivery end of the conveyor has a double-slide gate, which can always close against either lumps or dust, and which will never clog with the former or leak the latter. The slide-gate consists of two boiler-iron slides, 12 inches wide, which are actuated by three-to-one levers, thus providing an easy operated and very powerful gate arrangement.

The above described slide gate, together with an automatic lime-weighing apparatus; sand and lime proportioning device; storage bins; conveying apparatus, and car moving arrangement, together with sand screening mechanism, and lime grinding and air separating apparatus, were designed and installed by James F. Hobart, M. E., an experienced sand-lime engineer, who revised the plans furnished by the contractors and added many labor and time saving devices, which go to make this factory the representative of labor-saving methods in sand-lime brick manufacturing.

The lime, after passing the slide-gate above noted, falls directly into an automatic equal weight weighing apparatus, which, after weighing the lime, delivers it in 200-pound charges directly into the hopper of the lime hydrator, a machine furnished by the American Hydrator Company, Baltimore, Md. The lime passes through the machine, which is fitted with a perforated metal screen, having slots one-eighth inch wide and about one inch long. The hydrated lime falls into the boot of an elevator, which carries that material to the top of the building and drops the lime into the pipe of an air separating device, whereby the fine lime is drawn away by the air current from an exhaust fan, while the particles which are too coarse to pass through a screen of the required fineness (or which will not test to that fineness, as no screen is used in the apparatus) fall directly into the hopper of a

Williams hammer pulverizer, after passing which, the ground material flows into the elevator above mentioned, which carries the lime again to the separator. By this method, the lime of sufficient fineness is drawn off as it is formed, while the coarse particles go to the mill, time after time, until they are so reduced in size that the air blast will carry them away to the lime storage bin.

The lime storage is a tin-lined frame, V-shaped bin, capable of containing several cars of lime after hydration. From the large lime storage bin, the fine lime is carried by conveyor and elevator to a small bin over the mixing machine, from which bin the lime is drawn to the mixer as required. The sand is mined and carried to an elevator which feeds the dryer as required. By a peculiar arrangement of dampers and brick work, the dryer may be made to pass direct heat through the rotating cylinder, or the furnace gases may be passed around the dryer shell, while a current of fresh cold air is drawn through the shell over the sand. Or, a combination of these methods may be employed. This permits perfect drying to be effected, no matter what may be the condition of the material received by the dryer.



Lime House and Lime Conveyor Trestle—The Ross-Keller Press—Exact Weight Apparatus.

From the dryer the sand goes to an elevator, thence to a double screen, which removes almost completely the fine portions of palmetto roots with which the sand is impregnated. Without thus screening the sand the bricks appear to be afflicted with an aggravated case of the measles. The very fine screen, however, removes the vegetable matter almost entirely. From the screen the sand falls to the ground and upon a storage pile of sufficient capacity to allow the heat imparted by the dryer to be almost entirely dissipated before the sand is carried to the sand bin, from which it is drawn to the proportioning apparatus.

After cooling, the sand is allowed to flow into the boot of another elevator, which carries that material to the sand bin, from which it is drawn direct to the proportioning apparatus through gates and spouts, hand operated, in a manner similar to the lime. An exact weight-proportioning machine is placed under the two (sand and lime) gate spouts noted above, and to operate the machine or apparatus a quantity of lime is drawn into a conical hopper which will exactly balance the weight on a scale beam. Next the sand gate is opened and a quantity of sand is allowed to run into the hopper with the lime. The act of opening the sand gate drops the sand weight upon the scale pan, and when sand enough has been drawn into the hopper to balance the sand weight that article is removed from the scale pan by the act of closing the sand gate, thus leaving the apparatus always ready to receive another charge of lime without the necessity of making any hand adjustments whatever.

A water vibrator is placed in the water supply pipe leading to the mixer, and the vibrator is loaded with weights so that it will dump its contents at the point when just enough water has entered to properly wet the charge of sand and lime in the hopper above described. As soon as the proper amount of water has entered the vibrator, which is made with a double water chamber, one chamber drops its contents into a conduit leading to the mixer, and at the same instant the constant stream of water flowing to the vibrator is turned into the other chamber. At the instant the vibrator drops the contents of one of its chambers a bell is struck and the mixer man opens a gate beneath the proportioning hopper and allows its contents to drop into the mixer, where it meets the portion of water from the vibrator. To be more explicit, the charge of mixture-to-be travels through the length of the dry mixing part of the mill and then meets the required quantity of water. By the arrangement described an exact weight of both sand and lime is placed in the mixer at equal intervals, the length of which is determined by a valve in the water pipe leading to the vibrator chambers. To mix fast, a large stream of water is allowed to flow to the vibrator. To mix a smaller quantity each hour, the water is throttled until the desired point is reached.

From the wet and dry mixer the material falls into an elevator and is carried to the top of a V-shaped bin, and is delivered to either end thereof by means of an eighteen-inch flat belt conveyor. The mixture is allowed to remain over night in the storage bin to complete the hydration of any lime which may have escaped the hydrating machine, and then is drawn off through chutes in the bottom of the bin, which are controlled by boiler-steel slides, and deposit the material upon another eighteen-inch belt conveyor, which is placed lengthwise under the entire length of the bin. This conveyor delivers the material to an elevator, which in turn delivers the mixture to an agitator, where a final addition of water is made when necessary, and the material is delivered directly and automatically to the hopper of each press as required. A thorough final stirring and mixing is given to the material as it passes through the agitator, just before going to the presses.

The bricks are pressed and "snatched" in the usual manner and placed upon cars and run into the hardening cylinders as soon as pressed. In the morning the cylinders are opened and the cars all drawn out by a power car puller, which takes the entire contents of a cylinder at one pull, running the line of cars directly past the press and delivering the train upon a track between two transfer cars, both of which are so arranged that by laying down short pieces of rail in the car to be loaded the loads of brick may be run directly into the center of the car, and there unloaded at very little expense. H. Y. DRATOR.

Written for THE CLAY-WORKER:

ST. LOUIS BRICK AND BUILDING NEWS.

BUSINESS has been good with the brick manufacturers during the past month, and had it not been for the labor troubles many of the manufacturers would have been compelled to refuse more orders than they did. As it is, they are working to their full capacity and get materials out as fast as wanted, and there is little or no delay caused.

The building business for the month of May, as indicated by the permits, showed a gain of 14 per cent. over the month of May, 1906. The increase was not quite as much as that of the preceding months, but owing to the fact that May, 1905, was a good one in the building line, and the numerous discouragements that prevailed in the building business this year, the showing is a creditable one. The business for the month of June promises well, as a number of permits for large buildings have been issued since the first of the month and applications are pending for permits for some of the skyscrapers about to be erected. The present month, therefore, promises a much better showing.

The report of the building commissioner for the month of May shows an increase of $276,808 over the corresponding month last year. The total estimated cost of buildings, frame and brick, for which permits were taken out last month, was $2,163,255. The estimated cost of the buildings erected during the month of May last year was $1,836,447.

Both brick and frame dwellings showed a marked increase last month over the corresponding month in 1905. Permits in the number of 255 were issued for buildings, the aggregate cost of which was $1,914,291, while 233 permits for buildings, the estimated cost of which was $1,610,879, were issued in May, 1905.

For frame structures, 405 permits were issued last month for buildings costing $105,209. In the same month in 1905, only 342 permits were issued for buildings, to cost $80,174.

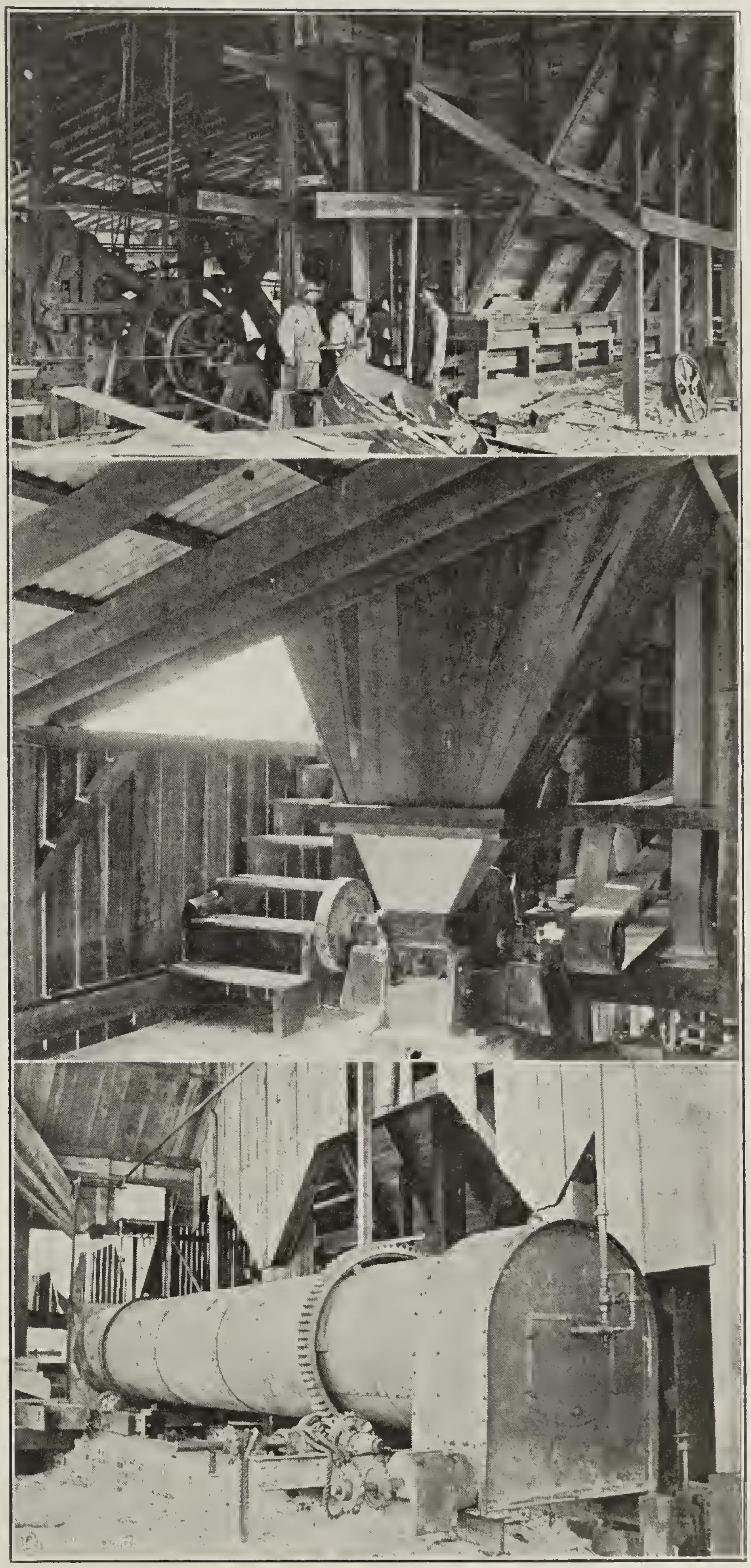
The Master Builders' Association has passed a resolution rescinding the agreement entered into May 14, with the Building Trades Council, by which both parties bound themselves to arbitrate all differences and eliminating the sympathetic strike principle.

A great deal of dissatisfaction has existed in the Master Builders' Association, on account of the recent strike of the structural iron workers and other disturbances, which affected their members and which the Building Trades Council agreement did not prevent.

The main reason for the action taken is that the structural iron workers have, following the refusal of their employers to grant the increase of 7½ cents per hour, stopped work, without submitting the matter to the arbitration board, composed of ten Master Builders and ten representatives of the Building Trades Council.

Almost all steel work in the city, with the exception of one firm, which is not connected, in any way, with the Master Builders' Association, is tied up.

It is not expected that the action of the builders will result in any drastic action on the part of the Building Trades Council. The abrogation of the agreement merely leaves the council with more latitude in the matter of calling strikes, while the agreement held the body within certain bounds.



Press and V-Shaped Storage Bin in Course of Erection—Lime Grinder, Air Separator—Lime Hydrator.

The agreement has not been entirely satisfactory to several branches of the building industry, outside of the Master Builders' Association, from the first, and it was predicted that the agreement would be short-lived.

The rapid improvement of vacant property is one of the hopeful conditions existing in St. Louis.

The tendency has lately been to build single flats, the owner occupying the upper or lower apartment and renting the other. By this plan the owner is materially assisted in paying off his incumbrance. The money for improvements, as the owner of the vacant lot may decide upon, is easily had. Most agents are willing to advance the sum required for the proposed building, allowing the borrower to repay a portion of the same in installments, which will average little more than the rental value of the improved property, the balance running for three to five years, at the end of which time the owner has the incumbrance so much reduced that he can easily renew the balance he owes, and in this way gradually cut down his indebtedness until it is entirely wiped out. This has greatly increased the building business in St. Louis.

The wrecking of the old buildings on the sites of the new skyscrapers is being rapidly pushed, but whether the latest developments in the strike situation will prevent the buildings from being built remains to be seen. It is hoped that by the time building proper begins, that some satisfactory adjustment of the troubles will be arrived at. A. SAINT.

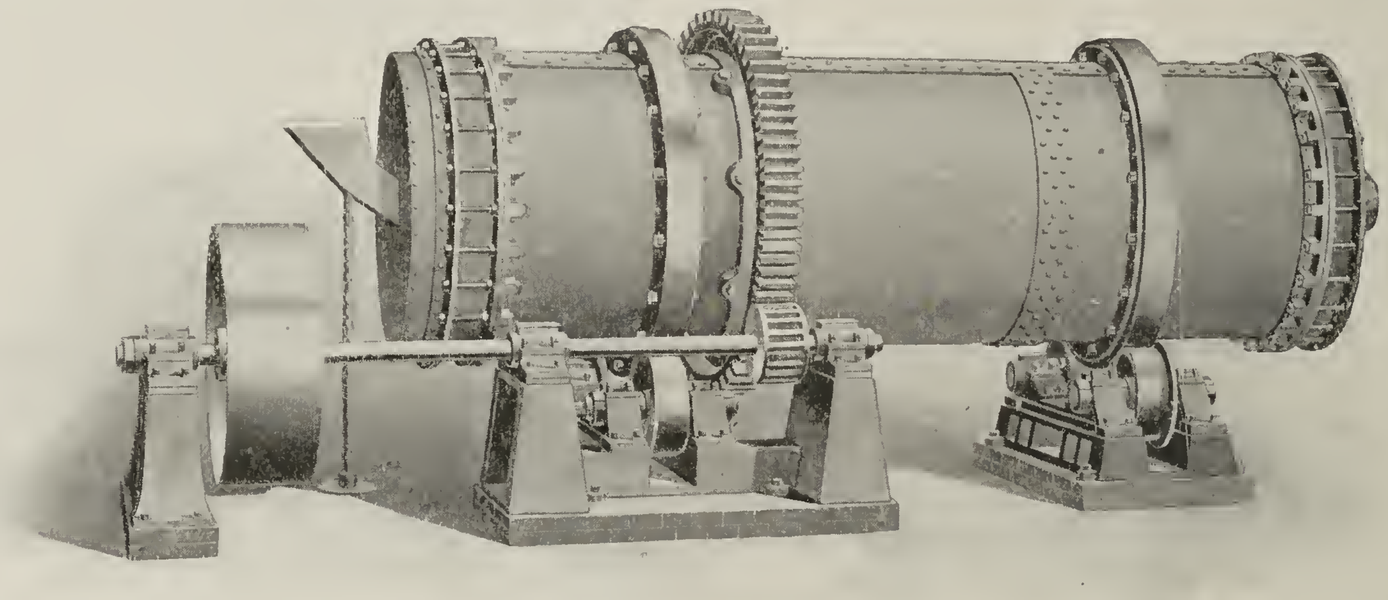
THE TUBE MILL MIXER FOR SAND LIME BRICK PLANTS.

A GREAT DEAL has been said and written within the past year regarding the use of the tube mill in sand-lime brick factories, most of which has not been complimentary. The critics in most cases have been prejudiced, possibly through no fault of their own, for it must be understood that these plants represent a new industry put up by firms generally composed of men who had never had any experience in manufacturing brick and had little knowledge of how machinery should be erected and operated. Of course generally these plants were put up under the supervision of "engineers," but they were going into problems which they had never met before and in most cases treated the matter more as a "get-rich scheme" than a good business proposition, so that when questions arose that they could not account for, the blame was put on the machinery installed and poor workmanship on the part of the builder of the machines. Naturally most of the blame was put on the machine, which was the essential feature as the easiest way out of the difficulty. On the other hand, if the builder had been consulted and his experience taken advantage of, instead of trying to keep everything secret, the result would have meant the saving of thousands of dollars and loss of time and worry occasioned thereby.

The tube mill itself is a simple machine composed of a cylinder lined with either the best quality of vitrified brick or natural flint, of the two the latter being the best. The grinding and mixing is done by thousands of flint pebbles inside of the drum, and the balance of the mill involves only ordinary mechanism such as gears and pulleys, when the Abbe tube mill is considered, as this has no conveyors, stuffing boxes, separate drives for feed, etc.

Experience has shown that the first essential point is to set these machines up on the most substantial foundation that can be built and to see that all parts are true and in line with each other. These are not serious points and can be taken care of by any good practical mechanic. The second should have been the guarding against the tremendous amount of dust created in these factories, to avoid its getting into the wearing parts of all the machinery, thereby decreasing the wear and tear, and is a problem that can be solved readily with the proper use of exhausters and dust collectors, which can be procured from a number of representative firms throughout the country. Experience shows that the foundations of these machines cannot be made too solid.

The mills when in motion and heavily loaded with pebbles, bear very heavily on the foundations, which, owing to the mechanical arrangement of all mills except the Abbe, cannot be made on the top as wide as desirable. The cast-iron bedplates have a tendency to dig into the cement and it is advisable to enlarge the bearing surface of the bedplates by placing larger cast-iron plates under them. These troubles will not be encountered when using the Abbe tube mills, tire style, which are built entirely different from other mills. By referring to cut of tube mill shown herewith it will be seen that the Abbe mill is built with tires surrounding the cylinder or drum and that it revolves on rollers, whereas other machines are built with end trunnions and revolve in two bearings. It will readily be seen that the Abbe form of construction allows the making of very large bedplates that extend the full width of the mill and can be made as long as desired. Furthermore, this construction reduces the power required to operate the machine on account of the rolling action, and by dividing the weight between four points at a distance of about 14 feet, with the driving gear between them, the twisting strain is very much less than in trunnion mills, where there are only two supporting points, which, in addition, are about 23 feet apart, with the driving gear located within about 1 foot of either of these bearings. To illustrate the foregoing still further, it can be said that any standard make of tube mill, trunnion style, will require from 80 to 90 horsepower to operate, whereas the Abbe machine of the same size, tire style, requires from 55 to 60 horsepower only.

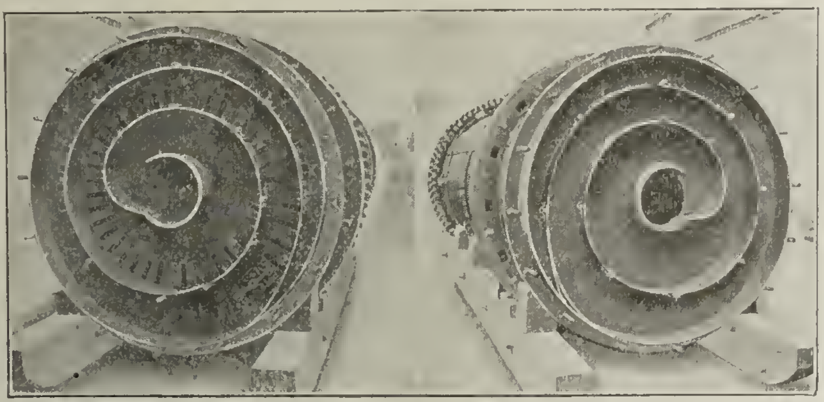


The Abbe Tube Mill Mixer.

In addition to the advantages mentioned, the Abbe tube mills are also equipped with an improvement that is without doubt the most important feature of all, and easily makes them the peer of all tube mills on the market today. This is the "Ideal" spiral feed and discharge, of which views are given. The inventing of the "Ideal" spiral feed was the means of perfecting the tube mill. Heretofore the great drawback in connection with the operation of this type of machine was the trouble caused by the feeding and discharging mechanism. There was no feed on the market that did not require a separate driving arrangement; had stuffing boxes to stop it from leaking, and whose main working part was a conveyor, which constantly wore out, clogged up or broke, causing long and serious delays, the discharge giving nearly the same annoyances.

All these troubles have been overcome with the use of the simple arrangement shown, which does away with a special drive, being attached direct to the mills, with which it revolves, requires no stuffing boxes, enables the feeding of the pebbles into the mill and can also be used to discharge them.

The grinding capacity of a tube mill has been questioned, and in this connection it might be well to add that the Abbe tube mill, with the "Ideal" spiral feed and discharge, overcomes this also. These mills can be loaded with pebbles from 3 inches to 4 inches over the center, whereas mills equipped with conveyor feeds can only be loaded up to the bottom of their feed opening (usually 4 inches below the center), as otherwise the pebbles will get into the conveyor and clog it up or break it. This gives the Abbe tube mills an increased grinding capacity, for the reason that this is where the diameter of the machine is the largest, and the use of from two and one-half to three tons more pebbles is gained in a 5 by 22 foot machine, and a proportionate quantity in smaller mills. Furthermore, the pebbles in all tube mills, when in operation, are carried up on the side toward which the machine revolves, so that a certain quantity of those on the bottom, one side of a line drawn from the center of a mill, are balanced by those on the other side of this line, and the weight to be lifted is thereby greatly reduced. In the Abbe tube mills, where the charge of pebbles extends over the center, the balanced portion is proportionately increased, thus greatly decreasing the power required to operate them. Anyone interested in this subject can obtain further information by addressing the Abbe Engineering Company, twelfth floor, 220 Broadway, New York City.



Interior of Abbe Tube Mill Mixer.

Alweys Read With Profit.

Editor Clay-Worker:

Enclosed please find P. O. money order for $2.00 in payment of renewal of subscription to The Clay-Worker. The journal reaches me regularly, and is always read with profit and interest. With many kindly wishes for your continued success. J. W. McMillan.

Milledgeville, Ga., Jan. 6th.

LAND DRAINAGE

BY J. J. W. BILLINGSLEY.

CAPACITY OF DRAINS.

IT IS GENERALLY agreed that the capacity of tile drains should be large enough to remove the greatest amount of rainfall that may be reasonably expected in time to fully protect growing crops from injury. Crops will not flourish unless the excess of water is removed from the soil and subsoil in a comparatively short space of time after it falls. The size of the capacity of the drain will necessarily depend upon the probable rainfall in a given length of time.

It is generally agreed that the drains should be large enough to carry away the surplus water of a rainfall of one inch within twenty-four hours after it falls. The rainfalls which exceed one inch are seldom, yet they bring almost one-third of the water which falls during the growing season, and should be provided for in thorough work in drainage. After tile drains are constructed it is not possible to increase the capacity; so it is better to provide for an increased capacity in the construction of the drains, at a little expense. A tile drain can be too large; it is desirable that the drain should be filled to its full capacity once or twice during the year to remove any sediment that may have accumulated in the tile.

Rainfalls do not pass directly through the soil and subsoil down to the drain and on to the outlet. A portion of every rainfall is required to saturate the soil and subsoil before it will pass into the drain. If the drains are laid deep—that is, three or four feet in depth—then quite a large amount of water is required to saturate such a depth of soil and subsoil, and a very considerable proportion of it will be brought to the surface by the capillary action of the soil, where it is evaporated. The amount of water retained by one hundred pounds of dry earth is reckoned as follows: Sand, 25 pounds; loamy soil, 40 pounds; clay loam, 50 pounds; the more retentive clay, 60 pounds or more.

In determining the size of tile, in providing underdrains of sufficient capacity to remove the excess of water from a one-inch rainfall in twenty-four hours, the fall or inclination of the drain, the depth, the amount of water likely to be retained by the soil and, last though not least, the character of the work done in the construction of the drain, must be taken into consideration. A drain laid with tile that are smooth inside and evenly jointed—that is, do not shoulder at the joints—have a capacity to carry one-third more water in a given time than a drain that is very rough and uneven inside.

On the basis of removing half an inch of water per day, assuming that the soil and evaporation will dispose of the other half an inch of the one-inch rainfall, it is estimated that a drain constructed of tile that are smooth inside and evenly jointed and laid at a fall of one in a hundred, with four-inch tile, will have a capacity to serve as an outlet to drain nine acres in twenty-four hours. Larger sizes of drain tile will drain a correspondingly large number of acres of land. It may not be amiss to call attention to the fact that it is useless to attempt great mathematical exactness in such computations, for (1) in several particulars the foundation of the formula does not warrant it; (2) the sizes of the tile vary, hence one size may be too small and the next as much too large; and (3) the exact area or watershed to be drained is never known with any considerable accuracy.

WET SEASONS.

The need of underdrainage may be seen by those who have an intelligent idea of the benefits obtained by it almost any season. To the many, however, the lesson has to be learned from wet seasons.

When the protracted rainy season comes the many look out on their fields and see here and there portions covered by water, or too wet, at least, to admit of cultivation, and with a sigh say, "I wish I had put in a few underdrains, as I have intended to do. If the rains keep on coming every day or two I won't raise half a crop." And it is true that if the rains keep on coming such farmers will grow poor crops. If the rains cease and a protracted drouth follows the soil will become hard and crack open, and then the crops will be poor on undrained land. When will this short-sighted method of doing things be laid aside for a better method of doing beforehand, so as to provide against damage to crops by either wet or dry seasons?

Some people are blessed with remarkably good intentions, but they never work them out in time to get the full benefits. When it is wet they can't, and when it is dry they don't need it, they think. After harvest is over look over the field intended for wheat, and if there are drains needed buy the tile and put them in in good shape. Don't allow yourself to farm on uncertainties.

A GOOD TILE YEAR.

The general prosperity of the country, the abundance of money, the low rate of interest and the heavy rainfalls have all contributed to the sale of drain tile. The owner of land that needed underdraining could hardly find a sufficient excuse to put the matter off any longer. In traveling through the country we see field after field being tile drained; and a pleasing feature of the work is that so many fields have several parallel lines of tile strung out, ready to lay when the ditches are dug, indicating more thorough work. Besides, the ditches being dug are deeper than usual. We find by inquiry that from three to four feet deep is quite common. We are glad that some of our good farmers are getting over the idea that two feet or thirty inches will do just as well. Go deeper and get corresponding greater benefits.

A FIELD BEFORE AND AFTER BEING TILE DRAINED.

We have a field of clay land, with a slope of about eight inches per hundred feet that we tried to bring up with manure by applying twenty loads to the acre, but it made no perceptible difference in the yield of the crop. We never knew as much as ten bushels of wheat to be produced per acre before it was tiled. Clover was a failure every time we tried it. The only certain and first class crop this field ever produced within the memory of the writer, running back over twenty-five years, was timothy; of this it would produce magnificent crops.

With the natural slope of this land the water would not stand on the surface, but the clay sub-soil would become so saturated that clover and wheat could not thrive. Admitting the statement that the application of straw manure will increase the fertility, of what benefit is this increase if the cold, wet nature of the soil prevents crop growth.

We tried manure to our satisfaction before tile draining, with results as indicated above. Now as to results after the drainage of the field mentioned. It is thoroughly tile drained. Last year it produced from 50 to 70 bushels of corn per acre; the year before, two tons of clover hay per acre; the year preceding, 25 bushels of wheat per acre, the corn shock space not counted out. The first crop of clover after drainage made two tons of hay and three bushels of seed per acre. Now I can grow enough clover and wheat straw on the field to keep it up and increase the fertility. Without tiling the land, it never could have been done. Now, in the management of the field I am practically master; before, I was subject entirely to the conditions of the weather, which were nearly every year against a paying crop. With tile drainage of wet lands, we can get the full benefit of manure applied; without it, never. J. M. J.

OPEN DITCHES.

Farmers frequently rely upon open ditches to carry away the surplus water, but they cannot be as useful as tile underdrains. It is expensive to keep them open and in running order. They grow weeds, brush and briars if they are not looked after almost constantly; they carry away the fertility of the soil in the surface drainage thus provided for. Then the amount of land taken up by open ditches is lost for cultivation and very inconvenient on account of turning when the crops are cultivated, and more so when machinery is used in harvesting. It is far better to put the open drains underground, even if it is expensive to buy large tile. After the work is done the owner will wonder that he did not see the benefits sooner.

ARKANSAS PRAIRIE LANDS.

In the Year Book of the Department of Agriculture reference is made to the needed drainage of Arkansas prairie lands, and also the heavy cotton lands of Mississippi. The little that has been done in the way of bringing these lands into cultivation by draining them has been by means of open ditches, and these require so much cleaning and repairing that it is discouraging to land owners. The further development of these and other lands in the Southern States depends upon introducing more thorough methods of drainage. Some legislation is necessary to provide for large systems of drainage, as has been done in other States, where the benefits of drainage are more fully understood by the leading land owners.

FATHER OF TILE DRAINAGE IN NORTH AMERICA.

The father of tile drainage in North America, John Johnston, late of Geneva, N. Y., was a Scotchman by birth and education, of strong and sturdy stock. He came to this country when a young man and at the end of a few years he found himself in possession of a large farm near Geneva, and deeply in debt and failing to grow remunerative crops. He saw clearly that something had to be done. He didn't go over to the village store or other places of resort and complain of the times, the monopolies, his ill luck and other things, but with his Scotch common sense he concluded that he must underdrain his land. If he had consulted with his neighbors they would have doubtless told him that the thing was impracticable, for the reason that there was no drain tile and nobody had ever tried it in this country. Johnston knew there was no drain tile in this country, so he sent to Scotland for a few, tried them and found that they worked well—horseshoe tile as they were.

Mr. Johnston interested a potter near by in making tile, agreeing to take all the tile he made. He went right on putting in tile each year as conditions would allow. The increased yield of his crops was marvelous, growing, as he did, often forty bushels of wheat and sixty bushels of corn per acre. In ten years he was out of debt and his farm well underdrained.

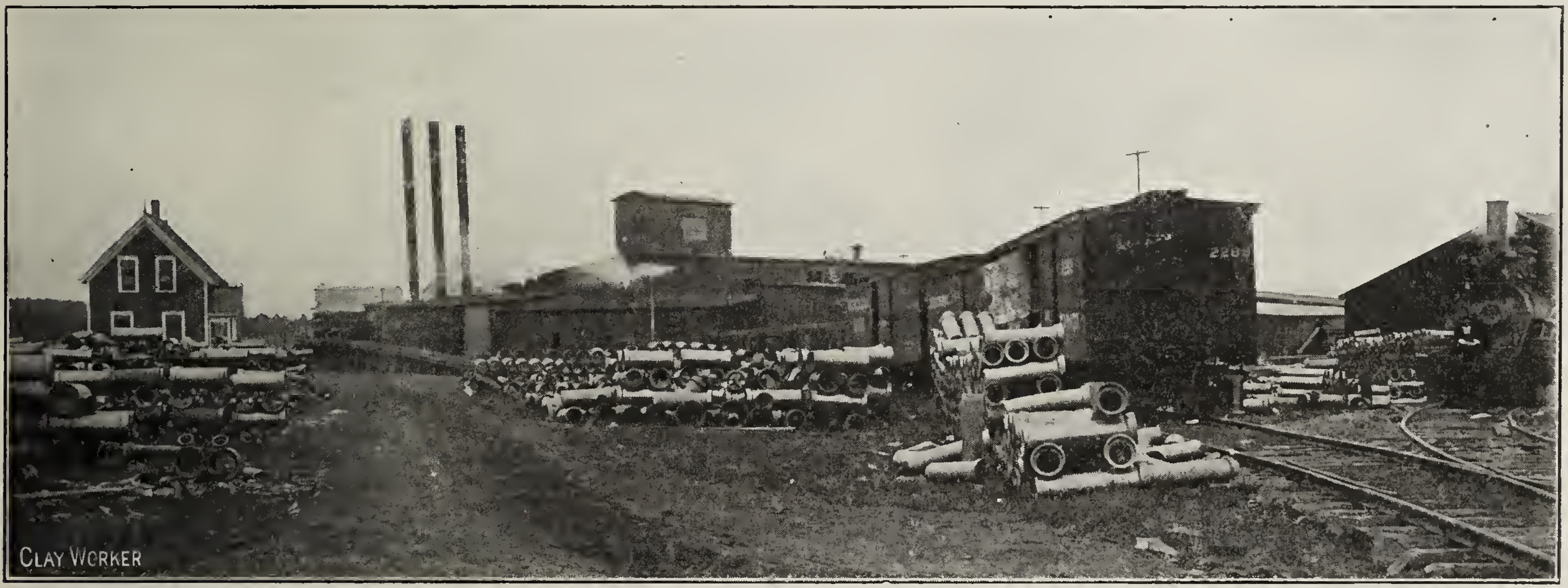
The results of his cropping were so astounding that men traveled long distances to see the wonderful yields reported through the agricultural press (Genessee Farmer). They found that all that had been claimed was true; that in fact he had claimed less than he had realized. Much of the Johnston farm was tile drained more than sixty years ago, and the work has not failed. There is every prospect that the drains will be efficient for generations to come. Who will estimate the profits already realized on account of the work in underdraining well done on this farm? There are thousands of farmers who can verify the truth of like benefits in their own experience.

Written for THE CLAY-WORKER.

WITH OUR NORTHERN NEIGHBORS.

An Interesting Tale of Pioneer Days in Nova Scotia—The Present Day Summer Clay Plants.

NOVA SCOTIA, or Arcadia, as it was called by the French, was settled partly by British colonists. In 1713 trouble arose between the French colonists and the British Governor. On the 12th of September, 1775, the French villagers of Belisle, near Port Royal, were full of sorrow. News had just arrived that they were prisoners of the English King, and that his soldiers would soon arrive to burn the barns and houses and to carry the people themselves over the seas, embarking at Halifax for the Old World. Flight to the dark forest seemed their only chance of liberty. Pierre Melancon, a hardy old hunter, was chosen leader, and a party of 300 set out on the long march. Their plan was to cross the mountains of the Bay of Fundy, where they hoped to find friendly Indians, who would convey them across the water to their friends in what is now called New Brunswick, but illness and starvation soon played havoc among the party, and many died by the way. Before they reached the sea, winter had set in and there was no hope of reaching their friends across the bay until spring came. They encamped on the shore of a small bay, where for months they lived a miserable life. On the 17th of March, only sixty weak, starved men out of the band of 300, were living to see a canoe come up the cove. In it were two friendly Indians, an old man and a strong, young man. They shared what food they had among the poor Frenchmen, but this was all they could do, for they came from a solitary camp. The old Indian's eyes glistened as he heard the name of Pierre Melancon. He was led to the hut where the old hunter had been lying for weeks, stricken with illness. The old Indian seated himself beside him and, without a word of explanation, said: "You have been across the bay to Chignecto in a canoe?" "Yes, twice," replied Pierre, with a gleam of pride lighting his sunken eyes. "My people and your people are there, many. They would come and take you in canoes if they knew," said the Indian. "Yes, if they knew," said the old man, sadly. "I have here a good canoe," said the Indian, "and my boy is brave and strong. He will paddle the canoe across; but he does not know the course, nor the bad eddies in the tide on the other shore. Will the old hunter go as guide and keep the canoe from bad tides?" The old man's hand dropped on his knees, his head fell forward on his breast, and there was silence in the hut. At last his old wife said: "Pierre, you will go; your strength may come back." The old man raised his head and seeming for the first time to recognize her, he said firmly: "Yes, old wife, it has come back;" and rising to his feet, he said to the old Indian: "I will go." Without another word Pierre placed on his head a small cap of otter skin and stepped outside the hut. At the shore they brought him the last food that was in the camp, but he would not take it. "You must eat to give you strength," they said. "I have strength," he replied, "and I have not eaten for two days." Turning to the young Indian, he said: "Push off and get into the bow." Then he bent down and kissed his wife's pale face and seated himself in the stern of the canoe without a word. Under the powerful strokes of the paddles the canoe darted forward like an arrow.



Office, Factory and Loading Track, Standard Drain Pipe Company, New Glasgow, N. S.

Friends, both French and Indians, crowded around the old hunter when they reached the other shore, and great was their surprise to learn about the starving party across the bay. The strongest canoe and a large fishing-boat were at once made ready to go to their assistance. Pierre was urged to remain among his friends and rest, but he insisted on returning to rescue his own people. He seated himself in the bow of the boat, and by his side sat the brave young Indian, his companion. The fugitives were on the watch for his return, foremost among them the old hunter's wife. Long before the others, she caught sight of his broad shoulders in the bow of the boat, and she wondered why he did not turn his head to look towards the shore where they were all waiting for him. The brave young Indian who sat in the bow of the boat beside him knew the reason why; he saw the dew gather on the cold, pale face, and the dim eyes loose their luster. He knew that the brave old hunter had found earth's final shore and was at rest at last. A day and a night the rescuers rested, while the starving French settlers were supplied with much-needed food. The next day was fair and the people were safely carried to the other side of the bay. The spot where they landed is still called Refugee Cove.

Here in this picturesque Northland I find some interesting clay plants, operated by hardy natives, worthy sons of those brave early settlers.

Plant of the Nova Scotia Standard Drain Pipe Company.

The factory is located one and a half miles south of New Glasgow and was erected in 1902. The officers of the company are W. C. Trotter, president; H. G. Perchard, secretary and treasurer. The company owns a 14-kiln sewer pipe plant at St. Johns, P. Q., Canada, where they make a fine glazed pipe, equal to any made in the United States. C. S. Trotter is the manager of the New Glasgow works. He is a son of W. C. Trotter, of St. Johns, and is an earnest worker and takes great interest in his business. They have to compete with imported pipe from Scotland, which they can do easily, as their pipes are much stronger. The clay used is shale and surface clay, and is hauled up an incline to a clay shed, 80x150 feet in length, and during the summer enough clay is hauled up for a winter's run, as the weather in winter is very rough and cold, in fact, too disagreeable to perform outside work. The power is furnished by a Corliss engine of 250 h. p., and three boilers of 125 h. p. each. The machinery consists of a large sewer pipe press of Taplin, Rice & Co., of Akron, Ohio; one 9-foot dry pan of the same make, and one dry pan of C. W. Raymond & Co., of Dayton, Ohio. The clay is tempered in three wet pans, made by Taplin, Rice & Co. The clay screen is an ordinary screen.

Supt. W. E. Kearns.

A. W. Saunders.
Paul Vogt.
Anton Vogt, Jr.

Secretary H. H. Blackadar.

The kilns are 34 feet in diameter and constructed very substantially. They are covered with sheds and no part of the kilns is exposed to the elements. The bottoms are of the old reliable T-flue type, with blind or false bottom extending within two feet of the bags. The burner is A. W. Saunders, a man of good judgment, and always trying his best to get the best results. He is certainly a servant worthy of his hire. Another man of sterling worth to the company is Mr. Collinn McKay, foreman of the clay bank, a hard worker and a man of good judgment. It is not everybody that can manage a clay bank, but Mr. McKay is certainly the right man at the right place. New Glasgow is a dry town, and Mrs. McKay attends to the wet part of Pipetown, in making a soft drink originated by herself. The drink is called spruce beer. She is called the "Spruce Beer Queen of Pipetown." It is a refreshing drink, does no harm, as a child can take it in safety. The secret of the manufacture of the juice she keeps to herself. I don't blame her. The making and drying of the pipes are in the care of Mr. W. E. Kearns, called "Billy." He is a coolheaded young man of much experience. He is the superintendent of the works and the good qualities as a manager seem to have been transferred to him from his father, Mr. Frank Kearns, of Akron, Ohio, the birthplace of the pipe industry. In seeing "Billy" Kearns directing the work and handling the men, it looked to me like it was Frank Kearns himself. In regard to the kilns I must say that I was surprised to learn that all the fire brick are imported from Scotland, as there is no fire clay found in Nova Scotia. But this is a mistake, as I believe, by observing the geological formation of the country, fire clay and coal mines will be found in abundance.

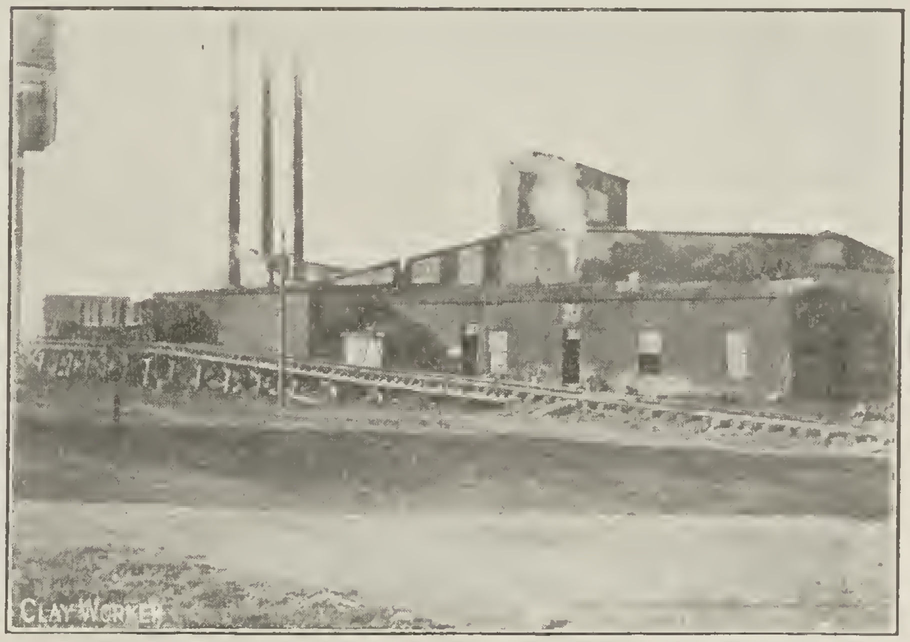
Any one who will take the time and spend some money can be independently rich in a few years, by locating fire clay and making fire brick. In conclusion, I will say that nobody goes hungry at Pipetown. The company runs an up-to-date boarding house, which is managed very well by Mrs. Arthur Clay Dunn. She is a very good cook of Scotch descent, and if a fellow has no appetite, he just looks at her and her meals, and he won't be bothered with indigestion. She has for an able assistant Miss Edith Green, who wears an everlasting smile, one that won't come off. There is always sunshine with her, no matter how dark the clouds, and she never looks sour when one calls for a second cup of tea. You see? A smiling face means happiness to all. Last, but not the least, I wish to mention Mr. H. H. Blackadar, who is running successfully in six parts—bookkeeping, secretary and paymaster, shipping clerk and yard-boss and information bureau.

The drying of the pipe is done in tunnel dryers, designed by the Taplin Rice Co., of Akron, Ohio. The pipes are put on platforms and taken to the tunnels on a patented truck, which deposits the pipes on the platform to the timber running lengthways through the tunnel. Hot air is blown into the tunnels with a large fan, manufactured by the New York Blower Company. The workmen are an intelligent class of people, composed of Englishmen and Canadian French. The former say 'ell instead of hell, and hoffice instead of office. The Canadian, in French, say si'l vous pl'a, instead of si'l vous plais. They talk patois, just like low German compared with high German.

Kiln Gang, S. D. P. Co.

Press Gang, S. D. P. Co.

A Portion of the Clay Bank.



View of the Factory, S. D. P. Co.

Brickyard of Mr. Stephen Brooks.

The Brooks brickyard is situated about one and a half miles from town, southeast of the Standard Drain Pipe Company's plant. Brickmaking was started about four years ago. Mr. Brooks has an abundance of a very superior quality of shale. There is enough of the material for many years to come, and his children and children's children can make brick when the father is returned to dust or clay, of which he was made, like the rest of us. By the way, he is a brick.

The boiler is of 40 h. p., made by J. Matheson Company, of New Glasgow, and the engine is also of 40 h. p., made by Frazier Bros., New Glasgow. A five-foot dry pan is used to grind the shale and a stationary slanting screen is used to screen the clay. Five thousand brick are made per day, but the machine is of 20,000 capacity. If enough clay could be ground, this would be done with a larger dry pan. The limited market does not warrant this increase at the present time. The brick is an average good fire brick, but is not used extensively on account of the imported Scotch brick, although Mr. Brook's brick are of an excellent quality for fire-bags and general kiln building and coke-oven construction. They will serve the purpose as well as the Scotch brick, and can be bought for about $10 cheaper.

It seems that the Nova Scotia people prefer foreign goods to the home product, which is a bad thing to do. A country that wants to build up must patronize home industry, first, last and all the time. The clay bank of Mr. Brooks is about 120 feet in thickness. There are three seams of workable clay. The machine used is a soft-mud machine, made by B. Craycroft, Vandalia, Ill. This is a case where I found a machine not advertised in the clay journals of the United States. Why not? [It was advertised in THE CLAY-WORKER in 1897.] What is the use of seeking a market so far away? The machine seems to make perfect brick. Perhaps the machine sells on its own merits and does not need any advertising, something unusual in modern times. The clay is hauled up with a winding drum in side-dump cars. The brick are dried with the rack and pallet system. The kiln is of the ordinary up-draft type, with permanent walls, and the brick are set 32 feet high. Coal and wood is used for fuel. Mr. Brooks has had several flattering offers for his property from parties intending to develop the clay beds to the fullest extent. The climate is very changeable, sometimes in winter the thermometer goes down to 28 degrees below zero Fahrenheit (exceptional). The average is about 16 degrees Fahr. The summers are very hot; mosquitos plenty. The winter begins about the middle of November, and spring opens up about May 1. The brickmaking season lasts about six months, but can be carried on, as in other places, the year round, by installing steam or hot-air dryers. Building brick are selling for about $8.00 per thousand, and I don't see any reason why brickmaking should not go on in winter as well as in summer, instead of hiding away from the snow and ice, like the Esquimaux, in Labrador. Nova Scotia affords splendid opportunities for enterprising Americans and Englishmen to put the shoulder to the wheel and push along the good thing, which means money and plenty of it. The geological formation of the country is a favorable one in many respects, one item, coal, being in abundance, but it seems to me there is not enough energy and push to wrestle from mother earth the jewels buried beneath. Some years ago, wages were equal to starvation wages in Europe (in some parts), and they are not much better at the present time, but I predict that the country will prosper, and that ultimately the workingman will be as comfortable as those in the States. It will come, slow but sure, and as the saying goes, "Better late than never."

George Brook's Brickyard, New Sharon, N. S.

This yard is located one and a half miles from town, between what is called Pipetown and Stellarton, close to the Standard Drain Pipe Company's works. The clay used is a rich loamy soil, deposited by frequent overflows of a brook, running into the New Glasgow river. The clay is of an extremely good composition, without any stones or lime, pebbles or other injurious matter, and works very smooth in a soft-mud machine, which was made in New Glasgow, and is a very practical machine, which makes good brick with the corners well filled out. The brick are dried partly in racks on pallets and on the ground and edged and hacked on planks, when stiff enough to handle. The brick are burned in up-draft kilns, with permanent walls, and are set 35 high. The kiln holds about 160,000. Coal and wood is used for fuel, and good hard brick are the results of burning. About six men are employed in the making of the brick, and they turn out about 12,000 brick a day, which is 2,000 to one man. That is a very good showing.

The brickyard is situated in a beautiful valley, surrounded by hills covered with rich green grass, at the time of this writing, May 22, 1906. The brook makes its way through the bottom lands in curves, and the many bends check the flow of the water and makes many little waves, which gives the little stream the appearance of a freshly plowed field. It's a beautiful site, indeed, and a pleasure for brickyard hands to toil in a place resembling the Garden of Eden. If Adam and Eve had been there, Eve would never have had a chance to take up the apple business, as there are no apple trees there; nothing but birch and spruce trees. The people here make beer out of the twigs of spruce, and perhaps, if Eve and Adam had been here in their time, Eve would have made Adam drink, which would have been as bad as eating the apple.

TEUTON.

DON'T FORGET THE CACKLE.

A duck, which had faithfully stuck to business during the summer and laid several dozen large, fawn-colored eggs, complained that she was not appreciated. "See that hen over there?" said the duck; "she has not laid so many eggs as I have, nor so big, but she has books written about her and verses composed in her honor, while nobody says a word about me." "The trouble with you is," said a wise buff leghorn cock that was standing near, "that you do not tell the public what you have done. You lay an egg and waddle off without saying a word, while that sister of mine never lays one without letting everybody in the neighborhood know it. If you want to cut any ice in this community, you must learn to advertise.—Exchange.

Written for THE CLAY-WORKER.

FUEL VALUES.

Relative Values of Lignite Coal and Wood.

TO THE NOVICE in brick burning coal is coal, but after a little experience he will find out that in coal there is a vast difference in the heating qualities and the physical condition. Practically coals have their individuality the same as clays, yet with all that a great deal has been written about the individual behavior of the various kinds of clays without paying much attention to the characteristics of the coal used and in connection therewith the type of kilns and the detail construction of the furnaces. It is very difficult to ascertain how many clays and kiln systems have been condemned by the injudicious use of a certain kind of coal.

Who can tell how many superintendents have been unable to obtain the requisite coal for their specific clay and type of kiln and thereby fail to give satisfactory results? Why is it that some burners, using practically the same clay and kiln system, but in a different locality, make a failure of brick burning in one place and a complete success in another? Simply because the conditions do not exist for the type of coal used in one place, while at the other place proper conditions exist. That there is a great deal in the coal was evidenced by the fact that a great many clayworking plants that had always produced good results made complete failures of it during the last big coal strike, in that they were compelled to use any kind of coal which they could obtain, and the other conditions were the same as before—the same clay, machinery, kilns, help and labor—yet the results were not satisfactory, and these poor results were justly blamed on the coal used. How could it be otherwise?

Dependent upon elementary constituents and physical characteristics, coal is divided into three generic types, to-wit: lignite, bituminous and anthracite. But as these divisions are not very closely marked, sometimes they are subdivided into semi-anthracite and semi-bituminous, in which the first leans more toward the true anthracite and the latter more toward the bituminous.

Lignite

is unjustly classed with mineral coals, yet it is not a true coal, as it has not aged enough to be as thoroughly carbonized the same as true coal; it might better be judged as a connecting link between peat and the so-called German brown coals. Upon destructive distillation true lignite gives off acetic acid and some of its allied compounds, whereas true coal gives only ammonia products. The so-called brown coals exist very sparingly in this country, but in some of the European countries they exist in large quantities and are very largely utilized in the briquetting industry. Lignite, as a rule, contains a very large percentage of water, and, no matter how well this lignite might have been dried out, even at a temperature higher than the boiling point of water, it will again absorb the same amount of moisture from the air. The large percentage of moisture is detrimental to lignite in more ways than one in that the user pays the same price for this so contained water and it is also necessary to expend quite a large amount of heat produced from the lignite to volatilize the water and to hold the same in a state of vapor.

Analysis of two lignites:

	Fort Jefferson, Ky.	Ouachita County, Ark.
Fixed carbon	40.00	34.50
Gas	23.00	28.50
Water	30.00	32.00
Ash	7.00	5.00
	100.00	100.00

With the furnace systems now in use in this country these two coals cannot be used to advantage. But our German fellow clayworkers are practically dependent upon this kind of fuel in a great many places and have invented what they call the system of half gas firing, which they claim good and economical. The adoption of this system proves the old adage, "Necessity is the mother of invention."

I have been informed that a brick concern in Texas is going to put in a half gas firing system to use the Texas lignites. This system consists essentially of a sort of gas producer in each furnace and the result is gas burned with hot air.

But all lignites do not contain such excessively large proportions of water evidenced by the subjoined analysis of two different lignites.

	Billingham Bay, Wash.	Cannon City, Colo.
Fixed carbon	58.25	56.80
Gas	31.75	34.20
Water	7.00	4.50
Ash	3.00	4.50
	100.00	100.00

As these two lignites contain very little water and the coke therefrom does not swell nor expand, there is no reason to doubt but that they would be used satisfactorily in the ordinary brick kiln furnace now in use.

But it is certainly good policy that a proximate analysis be made of lignite that a person might wish to use, so as to know something about its characteristics and value as a fuel. Practically these last two lignite coals have a leaning toward the bituminous types.

Bituminous Coal.

It is impossible to describe, under one statement, the physical characteristics of bituminous coal to cover all varieties. The term bituminous coal is calculated to mislead in that bituminous coal very seldom contains bitumen as such, but it is possible the term bituminous was applied on account of the similarity of the reddish-yellow flame accompanied by smoke which both bitumen and bituminous coal gives off during combustion. Bituminous coals contain more volatile hydro-carbon (gas or volatile combustible matter) than anthracite and in a great many cases the principal value of bituminous coals in brick burning is subservient to the percentage of such hydro-carbon contained therein. Furthermore, bituminous coals for our purpose may be subdivided again into coking and non-coking coals, bearing in mind, however, that very nearly all bituminous coals are turned into coke after the volatile hydro-carbons have passed off.

Analysis of two coking coals:

	Nelsonville, Ohio.	Cooprider Cave, Ind.
Fixed carbon (coke)	53.15	50.50
Volatile combustible matter (gas)	32.80	42.50
Water	5.00	3.00
Ash	9.05	4.00
	100.00	100.00

Caking coals are such coals which apparently during the process of combustion run together and also increase in bulk. Upon being heated up, small jets of gas leave the coal, which burns with a reddish-yellow flame and under ordinary conditions result in smoke. The writer has observed instances where the coke overspread more space than the original coal before the hydro-carbon had been distilled off. The fact that such coals swell during combustion bars them out from use in all types of kiln furnaces.

Non-caking coal, or sometimes called "free burning" coal is a bituminous coal in which the particles of coke formed during combustion do not cement together. It is practically the best class of coal, considering everything that enters into its use for brick burning, in that the air supply passing through the fuel is hardly ever restricted. It generally burns with a fine flame and, as a rule, leaves behind white ashes, indicating a small percentage of sulphur. But the very fact that it does not clinker very much bars its use in the so-called "pot" furnace, where the clinker is used for grate surface. In a coal mine in Ohio, where two veins are worked, one coal can be used in the above-mentioned pot furnace, and the other, the "white ash" coal, must be used in furnaces having grate bars.

The best type of non-caking coals are the so-called "Indiana" block coals. Analysis of two kinds follow. The first one is an ideal fuel for brick burning in that it contains no pyrites (sulphur) or calcite, and develops high heating efficiency.

	Brazil Coal, Indiana.	Block Coal, Indiana.
Fixed carbon	56.50	63.00
Gas	32.50	32.50
Water	8.50	3.50
Ash	2.50	1.00
	100.00	100.00

Analysis does not determine, however, whether a bituminous coal is caking or non-caking; such characteristics can only be determined in practice.

It is, perhaps, not out of the way to refer to the so-called coking table. All kinds of claims have been made for the coking tables, but it should be borne in mind that they are of service practically only in coking and baking the particles of slack coal together, and by being coked without pressure puts the slack coal in best possible condition for perfect combustion in that the coke is very open and porous; but in no case do these coking tables remove any of the detrimentals arising from the impurities in the coal. There will be just so much ash or clinker in the slack coal whether it has or has not been treated on the coking tables; but coals that will not coke will burn to ashes on the coking tables, hence they will be of no service with such coals.

Cannel Coal

is analogous to bituminous coal and burns very readily without melting, giving out flames somewhat like a candle would, which probably suggested the somewhat distorted name "cannel" coal. It has a very high calorific power, but can only be used in certain types of furnaces, as the percentage of ash runs very high, as is evident from the following two analyses: analyses:

	Pennsylvania.	Kentucky.
Fixed carbon	40.13	32.00
Gas	44.85	54.40
Ash	15.02	13.60
	100.00	100.00

Semi-Bituminous Coal

is a very valuable fuel in that it kindles very readily, like bituminous coal, but, owing to its high percentage of carbon, it has the lasting qualities of anthracite coal. Its chemical constitution allows good combustion very readily, and it is practically free from soot and smoke. These coals have high heating properties, but care should be taken to have proper furnaces for requisite air supply, as the proportion of ash runs quite high. (See analysis.)

	Maryland.	Pennsylvania.
Fixed carbon	68.44	73.11
Volatile combustible matter	17.28	15.27
Ash	13.98	10.77
Sulphur	.71	.85
	100.41	100.00

It will be noticed that the percentage of sulphur is quite low, which is of great benefit in burning some certain kinds of clays.

Semi-Anthracite

is a coal that stands between semi-bituminous and the true anthracite, owing to the volatile proportion of volatile combustible matter (gas or hydro-carbon) to the fixed carbon.

They are very valuable coals, as they have excellent heating power and, as a rule, contain very little sulphur and ash. But care must be taken in burning the same as regards the air supply, in order to get the best results, as it contains a larger proportion of volatile combustible matter than the true anthracites. The following analysis shows its generic constitution:

	Pennsylvania.
Fixed carbon	88.90
Volatile combustible matter	7.68
Ash	3.49
	100.07

Anthracite,

owing to its high percentage of carbon, is the more effective heat producer in the ordinary furnaces, if supplied with the proper amount of air. It does not soften or swell during burning and gives a short and hot flame, which is not very desirable for burning brick; yet furnaces and conditions can be created that these coals can be used to good advantage.

Analysis of anthracite coal from Pennsylvania:

Fixed carbon	92.07
Volatile combustible matter	5.03
Ash	2.90
	100.00

(To Be Continued.)

MR. BLINX'S BRICKS.

How He Secured Material for the Only Brick Foundation Walls in Storkville Center.

"The only man in Storkville Center who had a house with brick foundation walls," said Colonel Calliper, "was Robert Blinx. Not but what bricks are to be had in plenty in that locality, for there is a fine pit of brick clay in the neighborhood, but stone is cheaper still in that rock-ribbed region, and the universal custom there was to carry the cellar walls up to the first floor of the same material.

"And so, when Robert Blinx built him this house with above-ground foundation walls of brick, why, naturally, those brick supporting walls were considered remarkable, but the walls themselves were not nearly so remarkable as the manner in which the brick contained in them were obtained, with the incidental fact that Mr. Blinx got his bricks for nothing.

"Mr. Blinx, as it happened, lived a little out from the center, on a road to the brick kilns, and right back of his place, on another parallel road, there was a row of cottages, occupied by men who worked in the brick yard.

"Now, Blinx had cats, and it was not long after he came there before his cats became a great annoyance to his brickmaker neighbors in the rear. The cats would come out into Blinx's back yard and garden of nights and howl and yowl frightfully and disturb the brick men's sleep.

"Pretty soon, as people do everywhere at other people's cats, the brickmakers began throwing things at Blinx's—boot jacks and old shoes and the usual things like that—with the usual ineffective results, until finally one night, just by the merest chance, one of the men picked up and threw at the worst of the cats a brick, which landed fair and square on its mark, with results most gratifying to the brickmakers.

"After that they threw many bricks, which rarely hit what they were aimed at, but which did tear up Mr. Blinx's back yard and garden something scandalous. And then the throwing of the bricks suggested to Mr. Blinx an idea.

"Mr. Blinx came to think about building a new house. And he was a thrifty man, always saving where he could, and when those bricks began to come over he had an idea. Blinx set about collecting the bricks thrown at his cats, the mason having told him that if he built of that material his top foundation walls would require about 4,000 bricks.

"This was just a post and rail fence running along the rear of Mr. Blinx's property, between that and the brick men's yards, and now he put up, at the foot of his yard and garden plot, a six-foot board fence, setting it back about six feet, so that when the bricks struck it they would fall on his own land.

"All cats, everywhere, like to walk on the tops of fences, and all cats seem to welcome meeting other cats there as an amply sufficient provocation for clawing and spitting, fighting and howling; and no sooner had Mr. Blinx got his fence up than all the cats in Storkville Center, apparently, came nights to walk on it, and what had seemed the frightful howling of Blinx's cats seemed now to the sounds produced by this new great band of cats as but the feeble tuning up of a few scattering members of an orchstra to the gale that breaks loose when the whole outfit gets going.

"The brick men were stirred accordingly, and night after night, when they came home from work, they brought valises and carpet bags full of bricks, and when the cats started up they did. With the first squeak of a cat you'd hear a brick land against the board fence, and when the cats got going —why, humph!

"I've heard what some persons throught was quite some racket in back yards here in the city when cats were caterwauling, but all that would be child's play to what you could hear out in this quiet country place when the bricks were thundering on Blinx's board fence and forty cats on top of it were wailing and screeching and screaming above the uproar.

"All this was music to Blinx. Why, he told me that on a number of mornings he carried away five wheelbarrow loads of bricks, and one morning he got seven. And in less than a month he had bricks enough for what he wanted, and to spare.

"Then he tore down the fence and drove away all the cats, his own included, and gave the neighborhood peace, and gave the mason orders to go ahead with the cellar foundation, and he had bricks enough left for the walls and pretty near enough left for his chimneys.

"Blinx is dead now, but the old house still stands, the first and only house with top cellar walls of brick ever built in Storkville Center."—New York Sun.

The Clay-Worker Doing A Good Work.

Editor Clay-Worker:

Your CLAY-WORKER still continues up to the clip. We enjoy reading it very much, and we are always glad to see it come. You are doing a good work for our craft and we appreciate your services. "The laborer is worthy of his hire," and THE CLAY-WORKER is worth twice the price.

C. and L. Merrick.

Written for The Clay-Worker:

PACIFIC COAST NEWS.

THE BUILDING SITUATION in San Francisco is rapidly assuming a more satisfactory shape. Very soon after the fire it was found that the tall brick buildings of high-class steel frame construction had passed through the disaster with comparatively small damage. The new building ordinance, though not finally passed, has been framed so as to permit of the erection of Class A buildings of any height desired except on narrow streets.

Since the fire over four hundred applications for building permits have been made in San Francisco. These include applications for structures outside of the fire limits and for temporary buildings within the fire limits. It is unofficially stated that the total of the applications for Class A buildings (buildings with steel frames carrying all wall and floor loads, incombustible materials being used throughout) and Class B buildings (buildings with steel or re-enforced concrete frame, carrying the floor loads, but the walls being either wholly or in part self-supporting, all materials being incombustible) aggregates over $7,000,000. Permits have been granted to A. Shilling to erect a $250,000 Class A building at the corner of Second and Folsom streets, and to Rolkin & Sharp to erect a $90,000 Class A building at the corner of Third and Tehama streets. In general, however, permits will not be issued until the question of street widening and the new building ordinance have been finally settled. Plans are being prepared by all the prominent architects for many buildings, construction work on which will be begun as soon as the insurance on burned buildings is paid.

Reconstruction work has been under way for some time on a number of the damaged steel frame buildings, and several have been partly occupied for some days. The eleven-story Kohl building, which had only its four lower stories damaged, was the first to be reoccupied. The fourteen-story Merchants' Exchange building has received tenants on the ground floor and two other floors. It is being renovated rapidly. This is constructed of light pressed brick, with steel frame, protected by concrete and hollow tiles. The building passed through the fiery ordeal remarkably well, very little damage to the walls or frame being apparent. The plastering will have to be renewed throughout the building. There was some damage to the heating and ventilating pipes, etc., and the electric wiring will have to be largely renewed.

Concrete May Be Used.

It now appears that one result of the late fire of special interest to brick men will be the permitting of the use of reinforced concrete on a par with brick and stone in the construction of the best class of buildings. The new ordinance permits reinforced concrete to be used in the walls of all buildings in Classes A, B and C. Heretofore the use of concrete was practically limited to floors and foundations. These were quite common and appear to have stood the test fairly well. In the Union Ferry Depot, a stone structure resting on clusters of piling surrounded by concrete, the reinforced concrete floors were undamaged, although the tall tower on the building, one of the very few concrete-wall structures in the city, was damaged beyond repair, and practically all of the concrete will be removed and replaced either with stone or reinforced concrete by the Pacific Construction Company.

Brick and Stone in the San Francisco Fire.

As regards the earthquake, it may be said that under equal conditions brick and stone walls stood the shock equally well. Where the work was well done on solid foundations neither brick nor stone gave way before the earthquake. The United States Appraisers building, on Sansome street, a brick structure of three stories, passed through the shake with but little damage, as did the other government buildings, the Mint and the Postoffice, which are of stone construction. The earthquake demonstrated that with proper foundations and construction brick buildings can withstand earthquake vibrations as well as buildings built of stone. The Palace Hotel may be taken as an example of the resistance of substantial brick construction to these vibrations. This hotel was seven stories high, twenty years old and constructed of brick on a steel frame. The walls, however, were self-supporting. The hotel went through the earthquake without injury and though it was afterward burned, the walls stand to-day without a crack to show that it has passed through an earthquake.

As the earthquake itself is directly responsible for little over one per cent. of the damage inflicted during the great disaster, the greatest point of interest concerns the ability of brick and stone buildings to withstand the ravages of fire. For wall construction brick and terra cotta have shown themselves superior to stone in this respect. There is not a stone building in the city which was tested by the fire that is not badly chipped and ruined in appearances, at least. The Call building, one of the finest examples of stone architecture in the city, is a fair sample. This building was burned throughout the interior, and on the sides exposed to the greatest heat the sand stone chipped off in large flakes. Where the flames swept out through the windows, the damage is particularly noticeable, as the square corners have crumbled away badly. The Geary street side of the Mutual Savings Bank building, another fine stone structure, across the street from the Call building, is in such shape that the entire front must be removed, as in many places the stone facing is entirely gone.

In the Mills building, a combination brick and stone structure, at the corner of Montgomery and Bush streets, the contrast between the heat resisting qualities of brick and stone is striking. The first two stories are built of stone, and this portion is ruined. With the exception of the entrance arch, all the stone work must be removed. The brick portion of the walls, which comprised all the upper floors of the building, passed through the fire without damage. Where the flames poured through the windows the brick is blackened, but no disintegration is shown. This building was fireproofed throughout with hollow tile, and though on account of its large size and character of its contents, it made one of the hottest fires in the down-town section, its frame work is pronounced uninjured. The brick walls may have to be removed, owing to the fact that they have in places been thrown out of plumb, as throughout their entire height, they are self-supporting instead of being supported, story by story, on the steel frame work, as in more modern buildings.

There was no severe test put upon sand-lime brick in the recent fire. The only considerable use of sand-lime brick in the fire zone was in the Monadnock building, an unfinished structure adjoining the Palace Hotel. This building was burned through to a certain extent, although, as it had not been occupied, there was little inflamable material to feed the flames and the heat was probably never very intense. So far as it was tested, however, the sand-lime brick front was uninjured by the fire.

The San Luis Brick Company, of San Luis Obispo, Cal., commenced work for the first time, on May 4, to make brick. When the plant is running steadily there will be an output of 3,000 brick a day, and this will give employment to thirty men.

The First National Bank of Long Beach is about to erect a new six-story brick building at that place, and has selected a light, cream-colored brick, manufactured by the Corona Brick

Company. One hundred thousand brick will be used. The choice was made from a large number of samples collected from all over the United States.

Mr. Burnham, a contractor of Helmet, Cal., has leased the Helmet Brick Yards and secured the services of Mr. Petro, an experienced brick manufacturer.

The brick plant of Gray Brothers, at North Beach, San Francisco, which was new and had been in operation for only three weeks before the fire, was entirely destroyed, but will be rebuilt and be in operation within a few months. This plant will have a capacity of 100,000 brick a day.

Henry Blumenberg, managing director of the American Borax Company, has arrived in Los Angeles, from Daggett, Cal., and brings news that the chemical department of the mines of which he is in charge, has made careful and complete tests of the tailings, or clay refuse, remaining after the extraction of the borax, and found this material peculiarly adapted to the manufacture of tiling, pressed brick and even pottery. One of the tests which has been made by the borax company consisted of the making of bricks, which proved to be practically unbreakable, and when struck with a hammer gave forth a ringing metallic sound.

The first shipment of brick from the territorial penitentiary at Santa Fe, N. M., on an order of 500,000 bricks for the new railroad shops of the El Paso & Southwestern railroad, at El Paso, Texas, has been shipped, and two cars will be shipped daily from now on until the contract is completed.

A brick plant is to be erected at Gallup, N. M., by E. Beyard and William Patching and associates in the near future. The plant is to have the capacity of 30,000 bricks a day and arrangements are being made to increase the capacity to 50,000 per day. St. Louis capital has been interested in the venture and enough stock has been subscribed and paid for to purchase all the necessary machinery, erect buildings and put the plant on a productive basis.

T. T. Davidson, operating the Cananea, Sonora, brick yards in Mexico, is now delivering over 100,000 bricks of a special shape, designed for building the new MacDougal roasting furnaces, now being built at the plant of the Cananea Consolidated Copper Company.

Mr. Abramson, now engaged in making fire brick at the old terra cotta works, North Vallejo, Cal., has sold 25 acres of the land, recently purchased by him, to a company of strong means, who will engage in the manufacture of common brick. Having large contracts on hand, the new company will give steady employment to quite a large number of men.

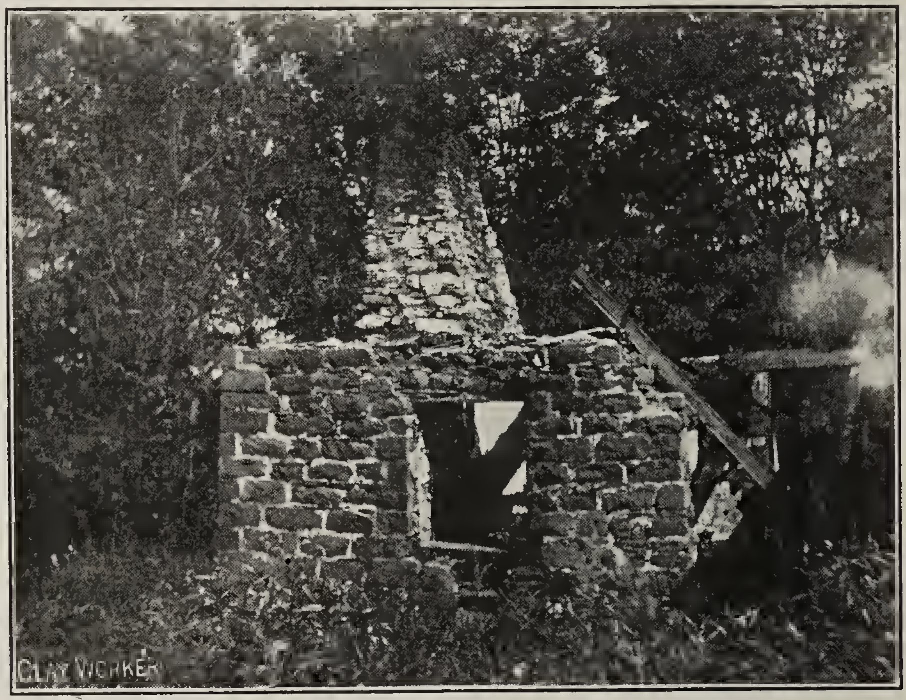
As a result of the San Francisco fire, the Carnegie Brick Company, Livermore, Cal., has had so many orders that a large field kiln has been built, which will accommodate one million of the white fire brick at one time, and is heated by eighteen oil burners. The entire plant will be kept running night and day for months to come. SUNSET.

A NEW SLAG BRICK.

An application for a Pennsylvania charter has been made by George L. Folger, Edward P. Russel and Henry H. Freeman, for a concern to be called The Superior By-Product Company, which will manufacture building blocks, fireproofing and other building material from furnace slag. The incorporators claim that a new process has been discovered whereby slag can be used to such a saving and advantage that it will in a short time displace the use of cement as a general building material. One of the subsidiary companies of the United States Steel Corporation, the Illinois Steel Company, of Chicago, has been experimenting with the material, and is now manufacturing about 5000 barrels of it daily. They are using the slag to make brick and other fireproof materials for use in their mills. A. H. Mercer, attorney for the new company, states that no definite information will be given out at the present time, but the full details will be announced later, and that the operations of the concern will be commenced at once, or as soon as the charter is received. The slag will be secured from some of the large steel mills in this city, and will at the same time solve the problem that has bothered many of them for some years—an immediate way to dispose of this waste material. He also claims that the slag can readily be converted into an artificial stone that will to a large extent take the place of the natural article in foundation work. It is also claimed that the brick manufactured from this material is an admirable one for the wear and tear of the streets, and that the company will engage in the manufacture of brick for street paving purposes.

AN ANCIENT CHIMNEY OF BRICK IMPORTED FROM HOLLAND.

THE accompanying illustration shows the chimney of a Colonial house which was recently burned near Hasbrouck Heights, N. J. The house was said to be the oldest structure in Bergen county, and was built in 1685, or thereabouts. The main structure was of stone and was built of rough rocks picked up from the fields. It was erected by Hendrick Kipp, or De Kype, as it was called in those times, who came from Holland in 1670, or a little later, and obtained a grant of a large tract of land in that vicinity from the early kings. He settled upon this farm and built the house which has stood ever since. The lower part of the chimney is stone, cemented together with mud made from the earth of the neighboring fields. The upper part is made, 'tis said, from bricks imported from Holland or England. Some say one, and some the other. At any rate, Mr. Kipp came from Holland, and it is probable that the brick were imported from there, too. They are larger than brick are made now and are wide and long, though rather thin. They have withstood the stress of weather and use for more than two hundred years and are still in a good state of preservation.



An Old Brick Chimney in New Jersey.

THE SOLUTION OF THE LABOR PROBLEM.

"It is the duty of the employer to look after the health and prosperity of his men, and it is also the duty of the employes to be diligent and loyal to their employers."—Richard T. Crane.

By The Light of the Kiln Fire

Having an Awakening.

"I SEE," said the man with the rent roll as he and his building contractor sat down to lunch across the table from the newspaper man, "that it has been decided finally that brick is the best fire resisting material to build with."

"Well," I said, "are you just now finding that out?"

"Oh, I have just today got what seems to be a sort of final verdict on it, but when we come to think about it we ought to all know that brick is the stuff to stand against fire, because when we want a fireplace or want to line a boiler furnace or build a wall for any purpose that must have fire inside of it, we always turn to firebrick. Come to think of it I never either saw or heard of cement or concrete being used to line any kind of a furnace, but I have been befuddled so much of late by reading claims and counter claims that I seem to have overlooked this fact which should be apparent to any one without the need of extensive study."

"Yes," I said, "we all know when we come to think of it that burned clay is the best of all fire resisting materials, with the exception of a few refractory materials that are not in common use for building purposes, and while there is all sorts of difference in clay products, the difference that makes you take fire brick for interior or fire box lining while the walls of a boiler may be what we term soft brick, still, anything in the shape of brick or burned clay will stand fire better than any other kind of building material, and it is more than passing strange that the wide-awake people of this country can be induced to take any other view of the matter, even for a little while."

"Yes it is," he replied, "but it looks like we are fated to take up with new ideas once in awhile and go into a sort of a trance that it takes us sometime to shake off and get our vision clear again, but I think we are all having an awakening now on this subject that will do us good."

A Contractor's Pipe Dream.

"By the way, you are building new houses all the time," I said, and then asked, "have you built any cement block houses?"

"No, and I am not likely to, either."

"Why?" I wanted to know, because I am looking for information as to how they compare to brick houses, not only as to cost, but as to quality.

"Well, they don't compare at all. I have not built any houses out of blocks, but I have built a number of basements and foundations, and that is about as far as I expect to go in the use of these blocks."

"Why, what is the trouble?"

"The main trouble is with the moisture. It is practically impossible to get a wall with ordinary concrete blocks that is anything like moisture proof."

"How is the cost of building these concrete foundation walls as compared to building them with brick, is it cheaper?"

"No, I can not say that it is. Sometimes it is and sometimes it is not, depending on circumstances. When I can get hold of secondhand or comparatively cheap brick of some kind it is less expensive to build with the brick. One advantage I have with blocks, however, is that it costs less in the way of labor to lay them. This advantage as you see is not due to any fault with brick, but because of the fact that brick layers are not only scarce, but they are high priced."

"That reminds me," said the contractor breaking into the talk, "that I have a scheme in my head I think your brick people could work out to advantage, especially in connection with the pushing of brick to build dwellings. And that is to make your brick up in the form of hollow blocks."

"You mean push the manufacture and sale of hollow, burned clay blocks, don't you?"

"No, I don't mean anything of the kind. Not that I have any objection to the hollow clay blocks, or to your pushing the manufacture and sale, but this pipe dream I have in mind is something entirely different, and that is, to take ordinary size brick, put them together by some automatic mechanical means into sections of hollow wall making a sort of hollow block on the order of the big hollow cement block out of brick to simplify the problem of brick laying at the wall."

"That's a new one on me, and sounds kind of complicated," I replied, "and I wish you would explain it."

"Well, you fellows have been working for years and years trying to get some mechanical means of laying brick in the wall without making much headway, and the thing that suggests itself to me is, that the manufacturers of brick might get some kind of a machine that would put together small sections of walls, sections not too big to handle, but big enough to make the problem of putting them into the wall as simple as that of putting in concrete blocks. It seems that you might put a certain quantity of brick together with cement mortar that would hold them, making the wall sections either solid or hollow, depending on the size of the wall, and the apparent requirements generally. I don't know just what kind of a machine or appliances it would take to do this work, but if you could work out something on this idea it seems to me it would put you in line to meet all the arguments and competition of the cement block people without any serious worry, and especially so at country towns among the retail lumber people who go into the cement block business as a side line."

"May be you've got the details of that idea in your head so that you can see it all clearly," I replied, "but right now it looks too complicated for me, and it looks like the better plan would be to give more attention to the clay block business, still, any new idea is worth looking at whether we can see all the way through it or not, and I am going to pass this one along and let others have a look at it."

STRENUOUS DAYS AT THE NATIONAL DRY KILN COMPANY'S PLANT.

A recent visit to the National Dry Kiln Company's works, Indianapolis, afforded an actual demonstration of the fact that they are having a very busy season. They have recently purchased adjoining property for the purpose of doubling the capacity of their factory, and ground will be broken for the new buildings before the end of June. Edward Gerrard, general manager, evinced no little pride in their new offices, which are both commodious and cozy. Every department of the factory was running full-handed, and from the noise made in the boiler department one could easily believe that they are making boilers enough to supply the whole country. "Our dryer business is very good in the South," said Mr. Gerrard; "we have recently installed brick dryers for the Bibb Brick Company, Macon, Ga.; D. A. Layton, Marion, S. C., and the Carrollton Brick Company, Carrollton, Ky., and the Roeske Brick Company, Michigan, City, Ind." That the National dryer gives satisfaction is evidenced by the following letter, which is one of many of the same import which they have on file from users of their dryer.

The National Dry Kiln Company, Indianapolis, Ind.:

Gentlemen:—Referring to the brick dryer you built for me, a short while ago, at Blue Brick Station, will say that same is giving perfect satisfaction. We find that the entire equipment is the simplest of anything we have seen and of the highest grade of material. I can cheerfully recommend the National Dryer to any one in need of a first-class dryer.

Marion, S. C. D. A. LAYTON.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

A New Kansas Plant.

Editor THE CLAY-WORKER:

Please find enclosed $2.50 for CLAY-WORKER. I am now putting up a soft mud brick plant at this place; it is 45,000 capacity. We will also run one repress. We have good clay here for soft mud only; it is very sandy. There is no other yard within ten miles, and we expect a good business. We have ten buildings waiting for brick now. The machinery is furnished by the American Clay Machinery Company, of Bucyrus, Ohio. The officers of the company are: L. P. Worden, president; Samuel Yaggy, vice-president; Dr. R. M. Van Duser, treasurer; C. E. Baxter, secretary, and T. K. Hamilton, superintendent and manager. T. K. H.

Syracuse, Kans.

European Postage—A Hint to Those Who Have Foreign Correspondence.

Editor THE CLAY-WORKER:

Nearly every American mail costs us one or two dollars in excess postage, and none of our other foreign correspondents are such sinners as our American friends. They frequently pay more postage than is necessary because they will seal printed matter. Today, for example, we received a letter from the States, which was franked ten cents and cost us fifty-five cents for excess postage. It contained a letter and printed matter, and if the letter had been sent in one envelope five cents would have carried it, and the printed matter could have been sent in a separate envelope unsealed, for four cents, making nine cents in all.

All sealed matter for this country must be paid for at the rate of five cents for every one-half ounce weight, while unsealed printed matter costs one cent for every two ounce weight. SUTCLIFFE VENTILATING & DRYING CO., LTD.

Manchester, May 23, 1906.

Gas Producer and Continuous Kilns.

Editor THE CLAY-WORKER:

Had it not been for the answer to question No. 3, in "Producer Gas a Solution of the Brickmaker's Fuel Problem," by Mr. W. B. Chapman, of New York, I should probably not have paid any further attention to it than to have absorbed the good points contained in his address before the N. B. M. A. Convention. How any one could make such a remark before such an assembly without a reply, is a surprise to me. I have no doubt but that a few of those in attendance have wished many a time that they had a man with a little more intelligence than it takes to merely chuck in coal. Now I would like to ask a question: What is the reason there is not a more intelligent class of brick burners? Is it because they have to shovel in coal, or is it because most brick manufacturers think a brick burner is not worth as much pay as an ordinary mechanic?

I am inclined to think that it is the latter. Does Mr. Chapman give us the reason in his answer to question No. 3? It may be his version of it, but there are others who have a think coming. The first part of Mr. Chapman's answer reminds me of a remark a Quincy brick manufacturer made, that it was a gentleman's job firing a continuous kiln, and he also told the then superintendent that we could not burn brick in this continuous kiln. He was making by the dry press process and burned in down draft kilns. He has gone out of the brick business. We make by the dry press process and burn in a continuous kiln, which lay idle for six years, and was considered by most people in this vicinity as a grand failure up to five years ago. Now, who was to blame for the failure of the continuous kiln here in Quincy? The constructing engineer made a failure of it, so he got one of his expert operators to come and try it. It took him eleven weeks to go around the kiln of fourteen chambers, and then not one-third of the brick were salable. We go around in twenty-eight days and they are all salable. Have made the rounds in less time. Let me say right here, that if we were burning either stiff or soft mud brick, we could turn out a chamber for every working day. I have made the round of a continuous kiln of fourteen chambers in sixteen days, each containing forty thousand brick.

When I took charge of this kiln, it had some fancy fixings attached, but dispensed with them. Now it is nothing more than fourteen little arch kilns connected with each other, fired with coal from the top, with gas producers arranged in the setting, so you see what heat would be absorbed by outside producers and flues leading from producers. We utilize also what heat is generated by the coke after the gas has been taken out, which means a saving of 60 per cent. of fuel cost over other systems of burning.

Now I will go back to the second paragraph in Mr. Chapman's address and ask the gentleman on his right what he considers perfection in a continuous kiln. He says it will not be attained in a thousand years. I do not think the gentleman can be very well posted, for if he only knew what had been accomplished during the past fifty years, I do not think he would say the continuous kiln would not be perfected in a thousand years. I have been informed that a Quincy contractor imported some face brick, made on a dry press, burned in down draft kilns, they have been rejected and he is getting the same number from the yard where the writer is working. Don't that speak a whole lot for the continuous kiln.

If any reader of THE CLAY-WORKER would drop in and see us sometime we will show you and take pleasure in explaining how we have obtained results. Our stock on yard at time of this writing is fifty thousand fronts; other grades, five thousand. GEO. E. DERRY.

Quincy, Ill., June 1, 1906.

Seeks Information Relative to Kilns.

Editor THE CLAY-WORKER:

The brick situation in this section, we are pleased to say, is good; in fact, we have never known it to be better. We find that this is the case throughout the entire state; every brick manufacturer has more orders than he can fill and prices have advanced 10 per cent. in consequence. Our only trouble is on the labor question. There is so much work going on that it is almost impossible to secure enough labor to carry on the work properly.

We are seeking information in regard to kilns. We are now using the old style clamp kiln, and our reason for adhering to this so long is on account of the peculiarity of our clay. This clay is unlike anything we have ever seen or heard of and brickmakers of considerable experience have told us they have never seen any like it. In the first place, it is very difficult to burn, it is impossible to melt it or make it run; we have burned small quantities of brick for other people in our kilns, and where this brick was burned hard, our brick would be only a salmon. Second, this clay expands in burning, instead of contracting. It expands in all directions, and with such force that solid brick walls, 40 inches thick, braced every six feet with 7x14 timbers, six feet in the ground, and with 1-inch iron rods across the top, fail to hold it.

We are looking for a kiln in which we can set the brick six inches from the wall and still retain the heat, and one in which we can burn with coal instead of wood. An ordinary up-draft kiln will be of no use to us, as the expansion of the brick will break the walls in a few burns, and second, we could get nothing but salmon brick in the center. If you or any of your readers can give us any suggestions that will be of any assistance to us, they will be greatly appreciated.

Sumter, S. C. SUMTER BRICK WORKS.

Brick News from Wisconsin.

Editor THE CLAY-WORKER:

Your favor of the 10th is at hand. The fountain pen is also received, and is very satisfactory. The brickmaking season in this vicinity is opening up rather late on account of unseasonable weather, and the stock of old brick is pretty well sold out. All of the yards that expect to run this summer are now in operation. Mr. Bumgener, who has been operating the plant of the Riverside Brick Company for the past two years, has decided to go out of business and is selling off his equipment.

The veteran brickmaker of this vicinity, Mr. William Finnegan, now out of the business, spent the past winter at Atlanta, Ga. He has recently returned here and says that he is going to Philadelphia soon to visit his birthplace.

We shall hope to see you up here this summer, to take that trip on the bay. J. W. HINKLEY.

Green Bay, Wis.

CLEVELAND BRICK NEWS.

BUILDING CONTINUES to boom in Cleveland, and the brickmakers are happy. Hundreds of factories, apartment houses and dwellings are shooting up like mushrooms in various parts of the city. With no labor troubles to stem the tide of prosperity, Cleveland can be said to be in better condition than ever before.

The common brickyards are working to capacity, with all of their product spoken for. More than ever before brick is coming to be used for foundations, and many frame dwellings which are going up use that product for foundation purposes as well as for chimneys and grates.

The public works department of the city is busy delving into the $1,000,000 which is to be spent this year in paving the streets of Cleveland. Ninety per cent. will be surfaced with brick, most of the balance being plain macadam. About all the asphalt the city uses is for patching purposes.

The demand for sewer brick is becoming a little brisker, though the situation is not as good as is hoped for. Vast quantities are to be used in the construction of large trunk and intercepting sewers this year, just as soon as all the legal technicalities are overcome.

A number of brickmakers, both paving and building, are drilling for gas on their various properties. This move has been taken to head off exorbitant rates from being charged by the regular gas companies and to find a substitute for coal, which is soaring in consequence of the strikes and rumors of strikes. A number of plants use gas already, while others are busy prospecting for it. None has met with much success thus far, though it is expected that gas in paying quantities will be found if the drillers go deep enough.

Considerable comment has been caused in Cleveland over a substitute for stone, which has been turned out by the Cleveland Hydraulic Pressed Brick Company. It is of terra cotta and matches granite in a way to deceive even experts. Two of Euclid avenue's finest buildings which have gone up during the past year are finished with it, the first story being of real granite and the upper stories being of the terra cotta substitute. These buildings are the Guardian Savings & Trust Company's new skyscraper and the new Taylor Arcade, which is almost completed, and which will be ready for occupancy in a few weeks. General admiration has been awakened when the announcement has been made that the upper stories of these beautiful structures were not faced with granite, but with a terra cotta imitation.

Several "all concrete" buildings are being erected in Cleveland and will be watched with considerable interest. Builders here are not quite ready to admit that such structures are ideal, especially when put up without steel support other than mere wires run through the concrete. The building code, which went into effect recently, limits the height of these concrete structures to four stories. An attempt was made to have the code altered, permitting two extra stories over that number. The effort was futile, however, and nothing over four stories in a concrete structure will be allowed.

While the demand for brick is exceptionally brisk, such can not be said concerning prices. Local brickmakers and dealers would welcome almost anything which would cause a shoot upwards in the prices of their product. BUCKEYE.

THE AMERICAN PROCESS COMPANY.

The above company requests the attention of brick manufacturers generally, and the manufacturers of sand-lime brick in particular, to their improved direct-heat rotary dryer, which is built with a view of developing large capacity. This dryer is so constructed as to withstand the strain incident to heavy work. The continuous action of this dryer, they say, is an important feature that should not be overlooked.

The wet material is fed in at one end continuously, while the dried stuff is delivered continuously at the other end; thus no time or labor is lost in charging or discharging the machines, which in many cases is far greater than that required for the actual process of drying. As the power required to start machinery is always greater than is required to keep it in operation, it will be seen that this apparatus requires smaller power units and driving machinery than any intermittent dryers. The direct-heat principle of these dryers is another important feature. The capacity of air and gases for carrying off moisture increases enormously in proportion to fuel consumed where the higher temperatures are used. In this system this principle is employed to the fullest extent without any injury to the material undergoing drying, and they guarantee high efficiency of evaporation. The temperature can be regulated to suit the most delicate or refractory material.

Simplicity of construction is another strong feature. The moving parts are very few and so constructed that the wear is small and entirely confined to parts easily repaired or replaced at small cost. All working parts are exposed and can be watched by the operator without taking him from other duties, so that the loss of time and expense of inspecting are saved and the possibility of accident due to carelessness in this matter is avoided. They claim their dryer is the most economical, both in first cost, as a larger capacity can be obtained for a small expenditure of capital, and also in the cost of operation, on account of its design and construction, requiring a minimum of labor and utilizing a maximum of heat in the fuel. They will make initial installation on a guarantee of capacity, economy of operation and maintenance.

These dryers are manufactured in various sizes, and the company also manufacture steam-heated dryers, indirect-heat dryers, presses and digestors, etc. They will be glad to send a complete catalogue and give a list of plants where their dryers can be seen in operation, to any one sufficiently interested to write for same.

THE CLAY-WORKER

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A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-THIRD YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

227-233 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

VOL. XLV. JUNE, 1906. No. 6.

CURRENT COMMENT.

Don't worry about the little things, but don't take this as an invitation to neglect them. Have you renewed your subscription?

* * *

Speaking of cement products, the cement of brotherly love that holds clayworkers together in the National Association is not only pretty good stuff, but it strengthens with age.

* * *

The place to throw out a poorly formed brick is when it first comes from the press. It doesn't amount to much then, but it counts up when you let it go through the dryer, the kiln, and then have to throw it out.

* * *

Because clay banks are plentiful and widely distribtued is no reason for working them up and selling the product without getting a fair return on the business. Clayworkers can take a lesson in this matter from the timber industry, where the raw material is getting so scarce and valuable that there are lots of men wishing they had back what they have worked up.

* * *

The New York Real Estate Record is authority for the statement that 15,000,000 second-hand brick have been brought to New York from New Haven in the last three months, a large section of New Haven being torn down to make room for the railroad extension, having thrown the old brick on the market. It is claimed that they were sold in New York for $8 per thousand.

* * *

The Seattle Brick and Tile Company, Seattle, Wash., recently ordered three automobile drays to be used in hauling the brick and tile from their factory to the city market. It is thought that this is the first use of the heavy automobile for brickyard use. If any of the readers of THE CLAY-WORKER can cite an instance of their earlier use we will be glad to chronicle the event.

ARKANSAS BRICKMAKERS ORGANIZE.

June 6 a number of the leading brick manufacturers of Arkansas met at Little Rock and took preliminary steps toward the organization of a State association. The following officers were elected: C. W Clark, Little Rock, president; A. Brewster, Pine Bluff, vice-president; R. C. Butler, Little Rock, secretary and treasurer. The purpose of the organization is not a combination for the purpose of controlling prices, but for the advancement of the brick industry in that State by the discussion of all matters pertaining to the business.

AN EARLY CALLER.

We found under our door recently a card bearing the following inscription: "June 6, 5:00 a. m.—Randall: Surprised not to find you up. Bound for Terre Haute; may be back this p. m.—W. S. P." We at first thought it was a hoax, but we found later that the gentleman from the country, accustomed to early rising, had actually called at that unseemly hour. Just twelve hours later, 5 p. m., W. S. Purington, of Galesburg, Ill., made his appearance at our sanctum after a strenuous day with Blair and other paving-brick men at the Hoosier Athens. Mr. Purington reports an undiminishing demand for paving brick and pressed brick as well. Their repressed pavers, known to the building trade as "Continentals," are still among the most popular front brick used in the Windy City. Millions of them are shipped to that market every year. The producer-gas experiment, which has been going on at the factory for the past month, has not been as satisfactory as Mr. Purington had hoped for, the cost being considerably in excess of the estimate. A more detailed report will be made when the first burn is completed and the matter has been more thoroughly developed. From present indications, the Purington paving brick plants will turn out more brick this year than in any previous season.

BRICK IN SAN FRANCISCO.

All sorts of stories have been told about the stability of brick buildings during the San Francisco earthquake. It has been said that brick buildings were shaken down, while others stood, but this assertion has been entirely unsupported by undisputed facts. What occurred before the fire broke out is at best but a misty memory to those who were present. And after the fire had run its course so few buildings were left standing that it was impossible to say whether the earthquake or the fire was responsible for the wreck. Until there has been a fair test of brick buildings during an earthquake, unaccompanied by fire, it will be manifestly unwise to attempt to pass judgment upon the stability of brick structures or their power to withstand the tremors to which the earth is frequently subjected in some portions of the world. But, admitting for the moment the argument that brick buildings were shaken down, it can be said so were stone and wood structures, and it is perfectly safe to conclude from what has gone before that there will be no cessation in the use of stone or wood as a building material in consequence. If it is true that wood is shaken down by earthquake shocks, as it has been many times, why not cease building with wood in earthquake countries? It would be quite as reasonable to condemn wood as it would to condemn brick. One is no more likely to be destroyed by earthquake shocks than the other, yet there is a terrible hue and cry raised about the instability of brick, while wood is considered as safe as it ever was. Brick is quite as safe for tall buildings as stone. If properly placed about a steel frame, there is no reason why an earthquake shock should destroy it, unless it was sufficiently powerful to destroy wood or stone or any other building material at the same time. It is not against brick alone that the criticism of the construction engineers and architects should be directed, but against all materials which did not stand the shock, and tnat would include them all. The truth is that the brick walls, or the pieces of brick walls left standing after the fire, are quite as numerous as are the stone walls or the steel walls or the wood walls. The ruins contain quite as much brick as any other building material in quite as good state of preservation. There is absolutely no proof that the brick walls were not as stable as any other sort. There is no proof that brick walls succumbed before others, and there is no proof that brick isn't quite as safe for rebuilding as wood, stone or concrete.

What is needed in this controversy is a close adherence to facts and a disposition to give each variety of building material a fair chance with other varieties. Brick has withstood quite as great disasters as other building materials, and the ruins of San Francisco contain no proof to the contrary. In future issues of THE CLAY-WORKER we will submit evidence and give facts on this subject gleaned by experienced contractors and architects who have made a careful investigation and whose ability and reliability, too, are unquestioned.

GOVERNMENT ASSISTANCE IN FOREIGN TRADE EXPANSION.

The Bureau of Manufacturers of the Department of Commerce and Labor at Washington is making commendable efforts toward assisting in the expansion of foreign commerce of the United States, and in these efforts it not only asks, but deserves the hearty support of both the industrial organizations of the country, and that of individual manufacturers. The department is establishing an extensive and comprehensive card system to enable it upon application to furnish information that may be desired by manufacturers or intended purchasers, and to this end blanks are being sent to many individual manufacturers which should be promptly filled out and returned, and if there are any manufacturers who are interested in foreign expansion who have not received the blanks they should get in touch with the Department of Commerce and Labor and have their firm name and product enrolled in the files there for reference.

One of the most important movements started by the Government in the way of promoting American trade interests abroad is in the proposal to create a staff of commercial attaches to American embassies and legations abroad conveyed in one of the President's messages to Congress the first of the year. The carrying out of this idea, which it is figured will cost the Government about $50,000.00 a year, and involves the appointing of six special agents of the Department of State with the diplomatic rank and title of commercial attache, who are to work under the direction of Secretary of State and in conjunction with the consular service to direct and assist in compiling commercial reports of special interest to the exporting trade from the most important foreign markets for our products. The idea is to enlarge and improve our consular reports to the Department of Commerce and Labor so that they may be more valuable as vehicles for furnishing information to those interested in extending our foreign trade. This is a step that is deserving of hearty endorsement of the entire industrial world of the United States, not only at the beginning, but after the machinery is put to working, and if we find it is not as perfect as we would like to have it, let us not try to kick it to pieces, but lend our assistance to the end that it may be improved and made to do as nearly perfect work as possible. It's a big undertaking and it will probably never be practical to furnish all the information desired by all the people, because our export business is not only of immense volume, but it is of extensive variety and no six men, no matter how expert they may be in industrial matters, can clearly understand, nor fully comprehend all the requirements of the different lines of trade. Still, they can do lots of good, can easily earn for the country good returns on the amount it will cost to maintain them and the efforts being made by the Government to assist in promoting foreign trade should have universal and hearty support. This may not appeal to our clayworkers, who depend almost wholly on local markets, but if it helps other manufacturers directly, it will help the clayworker indirectly.

NO MUCK RAKE NEEDED IN THE CLAY FIELD.

One-half the world may not know how the other half gets its living, but it is eternally and everlastingly trying to find out. Even the government takes a hand and some of the investigations that have been going on, aided and abetted not only by earnest effort and also by the man with the muck rake, has uncovered places that, it is thought, were beyond the rays of the searchlight. It's enough to make us sit up and wonder what is really the limit to the depth of scheming into which some enterprises have gone, and again to reflect on how much salt it is advisable to use in the digestion of the things one reads about the wrong-doings of humanity in big places. There is one refreshing thought that stands out in all this, however, and that is that the clayworking industry is entirely apart and aside from the things of this industrial world which call for investigation, trust-bursting and the use of the big stick generally. There is not room to even use the muck rake, so the clayworker can stand by, watch the procession in this line and say with the little boy, "It never touched me."

INVESTIGATIONS OF A DESIRABLE SORT.

We have government investigations in connection with clay industries, investigation that is not only welcome, but courted. It's the helping-hand kind, the government experts working hand in hand with the industrial experts of the clayworking industry to develop new ideas and new territory in connection with the clayworking industry. This brand of investigation is sought, and you don't have to go behind closed doors to get it or take a muck rake and stir it up. It is really co-operation, and the investigation part relates purely to the clays and the manner of their manipulation. This, in addition to putting the clayworker in an enviable position, these days should also furnish an example for some of the people who are being investigated and having things turned up that they don't like. There is nothing like open-handed work, both as individuals and in associated efforts, and a free exchange of ideas and criticisms with a view to general improvement, and not temporary personal advantage.

WHY THERE IS LITTLE LIKELIHOOD OF TRUSTS IN THE BRICK BUSINESS.

There is, of course, a certain elementary protection in the clayworking industry against forming what is termed trusts, because the raw material from which clay products are being made are so widely distributed and so plentiful withal that it precludes all idea of cornering the source of supply, or in other words, doing the thing that forms the real backbone of the real trust effort. But, apart from all this, the broad-gauged ideas of the trade itself are a safeguard in this line. The clayworking industry, more, probably, than any other industry in the world, has long since learned the lesson that to receive you must also give, and clayworkers have for years been receiving great benefit in giving freely to the general public, through association meetings and the trade press, their ideas on the requirements for better success in the clayworking industry. May be their progress has not been so swift or the profit so large as in some of the secret combinations, but they have done well and made a record for themselves that they can be proud of, and in the midst of all this turmoil and investigation the clayworking industry stands apart and furnishes a great example of what can be done in the way of promoting an industry by open and above-board association work.

THE COLOR QUESTION SETTLED.

Under the above heading the Ricketson Mineral Paint Works, Milwaukee, Wis., discuss in an attractive pamphlet the importance to brick manufacturers of moderate-cost minerals for improving the color of clays, sands and cements. From the large number of testimonials from those who have used Ricketson's coloring mixtures, it is evident that the color question has been settled to the satisfaction of many manufacturers. For further particulars see their ad. on page 919, or, better, write them for their trade literature.

OBITUARY.

Harris Walcott, son of Benjamin Walcott, president of the Indianapolis Terra Cotta Company, died of rheumatic fever at New Haven, Conn., June 7. Mr. Walcott had been sick but a short time. He was to have graduated from Yale within the month, and he and his parents had planned for a trip abroad immediately afterward. He was an exceptionally clever and lovable lad, and his untimely death is a source of great grief, not alone to his parents, but a large circle of personal friends.

Written for THE CLAY-WORKER.

TWO BRICKMAKERS.

I.

The good Lord made a little world, this globe on which we stay.
He filled the surface pockets up with sand, cement and clay.
To use His best material, according to His plan,
One bright, sweet day He dug some clay, and from it He made Man.

II.

How did the good Lord make His man? He molded him from clay,
How does His little man make Brick? Almost the self-same way,
Except, to make them good and hard, he burns his brick and tile.
The good Lord, if His man ain't good, will burn him after while.

III.

How did the good Lord make His man? With brain he filled his head.
"Young man," said He, "if you're no good I'll burn you when you're dead.
Your pavers must be vitrified, so burn them black and blue.
If you don't make your builders hard I'll make it hot for you."

IV.

The good Lord, at His factories, has never had a strike.
He's made two billion, more or less, yet no two look alike.
He makes two kinds—both soft and hard—but each kind stands the test.
The one intended for rock face, while one should be repressed.

V.

To build a fine structure that will stand the ravages of time,
Don't build it from poor blocks or brick, made up of sand and lime,
For if the Lord had made His man from sand, lime and cement
There would be no men living now—this world would be for rent.

VI.

How does God's little man make brick which will forever last?
Just like his Lord, he uses clay, then gives them a hot blast.
Much like the boy who imitates his dad, he imitates his Sire.
The brick, like man, will not burn up when this whole world's on fire.

D. O. LOY.

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IF YOU KNEW the advantages of controlling the draft in burning brick, you would not be without a draft gage. We have draft gages for down-draft and for continuous kilns. The Obel gage is self-registering and shows the exact time of every firing.

THE RICHARDSON-LOVEJOY ENGINEERING CO.

(See page 915.)

WANTED, FOR SALE, ETC.

WILL SELL half interest in buff and fire brick plant to experienced man who could manage it.
Address "MYERS,"
6 1 ? Care Clay-Worker.

WANTED—One set of eighteen inch to twenty-four inch clay rolls. Address
AMERICAN PRESS BRICK CO.
6 1 d 6500 Easton Ave., St. Louis, Mo.

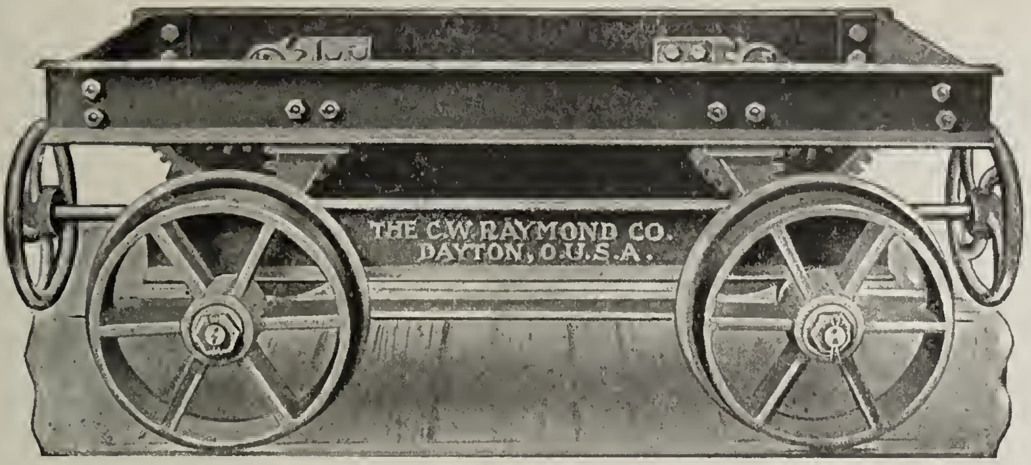
WANTED—A first-class manager, who is experienced and is a hustler. for a well equipped brick manufacturing plant. Good sale for output and a money-maker. Would sell some stock in the plant to a satisfactory manager. Address
"OPPORTUNITY,"
6 1 dm Care The Clay-Worker.

FOR SALE—One No. 9A Brewer brick and tile machine. Also one No. 1 Brewer pug mill that is used with same. Used but one season up to this time. Reason for selling, have put in a larger machine, No. 10, same make. Address D. A. LAYTON,
6 3 c Marion, S. C.

For Sale, Wanted, Etc., Ads Continued on Pages 900-904.

The Raymond System of Open-Air Drying.

Much the Cheapest Drying System Known.



The McKenzie Patent Elevating and Lowering Brick Car.

The McKenzie Patent Elevating Car is so constructed that it operates positively and without perceptible jar. It can be run in either direction or operated from either end. The car is built a standard 24″ gauge, and can be adapted to existing methods. The car is built with a view to withstand the rigorous duty required of it. Entirely of iron and steel, and well proportioned. Exhibit 63 explains in detail.

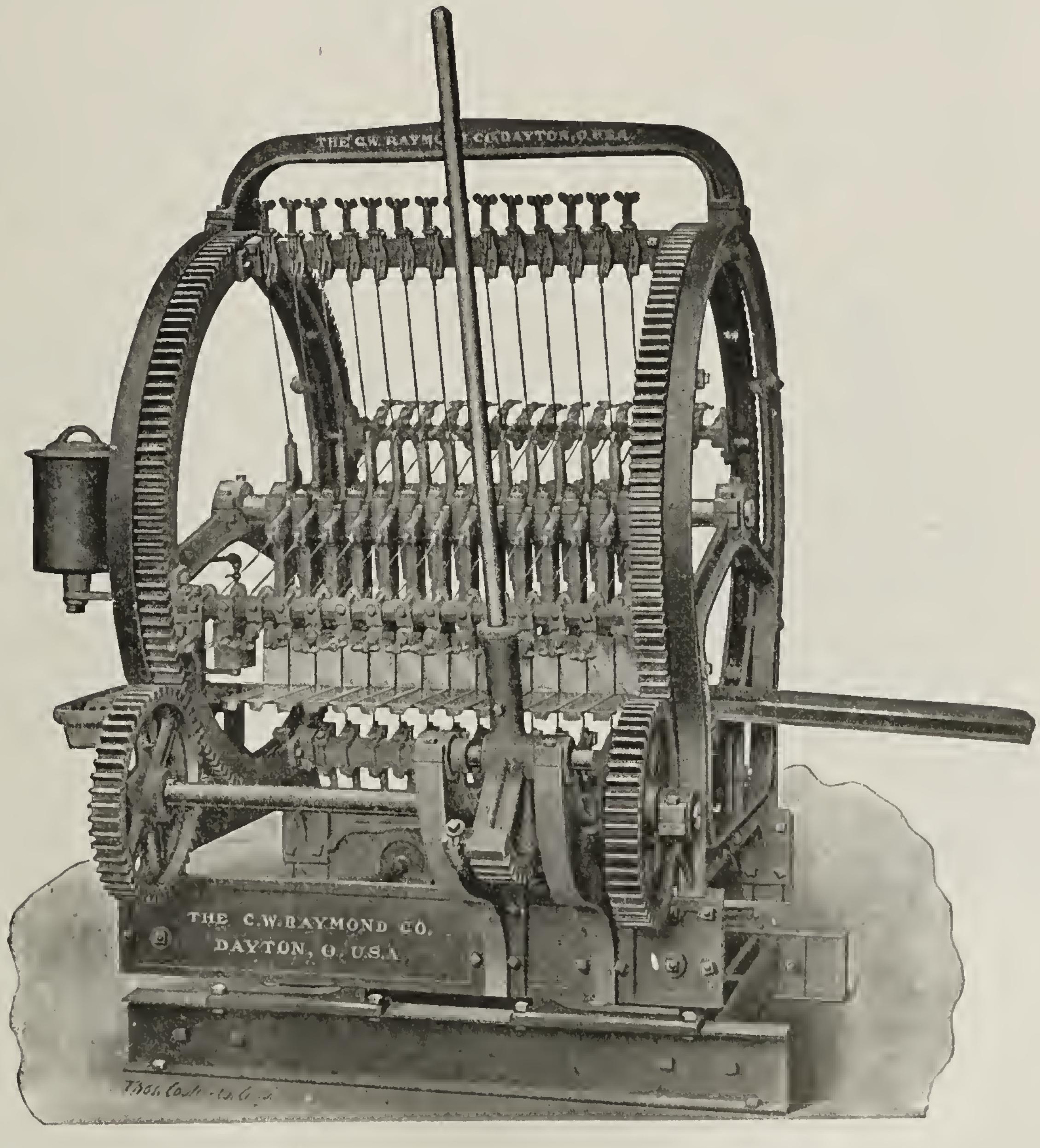
The C. W. RAYMOND COMPANY,

DAYTON, OHIO, U. S. A.

THE UNIVERSAL.

Fills the demand for cutting a high grade face brick. A shear down cut is given to the brick and all brick are cut positively true to line. The cutting wires are guided by the platten entirely through the column of clay. The rotary motion is in one direction, and the capacity limited only by the skill of the operator. The most practical cutter made.

We manufacture everything required for the brick plant.



RAYMOND UNIVERSAL HAND CUTTER.

Written for The Clay-Worker.

FROM THE IOWA CLAY FIELD.

THE NEW PLANT of the Grinnell Brick and Tile Company is under active construction. This plant will be a modern "year-around" plant. All buildings will be brick and hollow block, and the dryer will be entirely fireproof. The kiln plant may be continuous and may be the Platt triple down-draft type, but this point has not yet been decided. The plant is situated on the Iowa Central railway and, with a large home demand, will probably enjoy an attractive market. The company is made up of successful business men, some of whom are experienced in the clay business.

Another new plant is in process of installation at Kellogg, Iowa. A stiff-mud plant of about 15,000 daily capacity is well along and operations will probably commence about June 15. Brewer machinery is installed and a truck and pallet system of drying will be used. This is a very neat little plant and is quite conveniently arranged. The kiln equipment will be round down draft.

A new plant for the manufacture of brick and tile is also being installed at Winterset, Iowa. A company is formed having a paid-up capital of $10,000. There is a considerable financial responsibility in the stockholders, but, the plant being situated off the line of railroad, a small investment will be made in the start and be increased when the interurban railway survey, which passes their works, becomes a reality.

The new plant of the Barber Asphalt Company at Des Moines is rapidly nearing completion. It is exciting much interest amongst Iowa clayworkers. It is without doubt the largest investment of capital in clayworking yet made in Iowa. Sixteen 80,000 capacity round kilns and four large stacks are now up. A Rodgers waste-heat dryer of fifteen tracks is about completed. The power plant, consisting of three 100 horse-power boilers and a 250 horse-power engine, is now installed. A Bonnot Special brick machine and three Eagle (Des Moines) dry pans are in place. Under-scrapers are done away with in this dry-pan equipment, the clay falling into a pit and falling by gravity into an elevator hopper, or boot. Clay will be screened over inclined piano-wire screens. Everything is arranged with the idea of economical operation. The arrangement is a good example of compact roominess. The whole plant and yard will be paved with brick and lighted by electricity. It is fireproof throughout. This operation of capital is interesting in a good many ways. A plant costing in the neighborhood of $60,000 was purchased by the Barber company within the past two years, and it has been entirely and completely demolished to make room for this new modern plant. It seems rather strange to the clayworking trade that this asphalt company should be investing $175,000 in a paving-brick plant in Des Moines, where they are making a strong fight for their asphalt paving and where there is no marked scarcity of paving brick. All agree, however, that they are doing well what they have set out to do.

There seems at present to be little activity in Des Moines clay plants. Two large ones are shut down temporarily and some few others are practically closed down and undergoing extensive alterations and repairs. The old Merrill yard, west of the new Barber plant, has changed hands and is being overhauled. It is generally understood that this plant will be given over to the drain tile trade. We were unable to ascertain to what extent alterations would be made at this plant.

The Des Moines Clay Manufacturing Company are producing a very nice side cut face brick. They are using a Wallace semi-automatic cutting table with marked success, and are enjoying a growing demand for the product.

The Frost Pressed Brick Company, at Des Moines, will install several new kilns of the round type. This company has quite an extensive variety of clays, and in addition to the supply of clay and shales on their property have access to coal measure clays from a mine adjoining their property. When equipped with proper kilns this company will be in a position to supply a fine article of pressed brick in a variety of colors.

It is understood that the Goodwin Brick and Tile Company will not entirely discontinue the manufacture of pressed brick at their Des Moines yard, purchased from the Dale Brick Company, but will produce at this yard both brick and tile and confine their new plant to the production of drain tile.

The Platt Pressed Brick Company, of Van Meter, Iowa, are producing a great many fine-grade drain tile at their yard this season. This is the third pressed-brick yard in Iowa we have visited this season where a growing interest in the tile business is being manifested. This is a comparatively new line for the Platt company. They have achieved an enviable reputation in the face-brick line, their brick having stood first in all tests made by the Iowa Geological Survey on "pressed brick used in Iowa," which means a great deal, and we should judge the company might well consider this verdict a valuable asset. The company is making remarkably even burns of drain tile, and Mr. Platt, the inventor of the Platt triple-draft system kilns, says it is due largely to his kilns. This company has an extensive variety and deposit of clay and shales. They have two shafts reaching a deposit of fire clay 250 feet below the surface. They have a large surface deposit of shale and quite a remarkable deposit of red burning clay, covering, as it does, some sixty acres and being free from all impurities. It is the intention of the company to use this clay to a large extent in the near future. They will provide means of working it into face brick and for making plastic face brick and drain tile.

Gladbrook, Iowa, is active in the production of a very fine article in the pressed-brick line. There are two well-equipped plants at this place—the Gethmann Bros.' Pressed Brick Company and the Gladbrook Pressed Brick and Tile Company. These plants are side by side along the line of the Chicago Great Western Railway, and their clays are identical. Both produce very handsome pressed brick of a dark red shale, and the Gethmann plant produces brown brick as well. The Stauffer yard produces quite a few drain tile, which are sold mostly to the local trade. There are some interesting features of original design at these plants. The method of handling clays from the field to the sheds is interesting. The field is prepared in the usual way by discing, and is gathered by Quincy clay gatherers. It is then conveyed to the base of an elevator and dumped into a hopper. From this hopper an endless chain carries the clay to the elevator boot and the clay is elevated some sixty feet and flows by gravity to all portions of a shed of large proportions. Fernholtz & Scott presses are used at these plants. These companies are enjoying a growing demand for their brick.

The old-time Anson yard, producing dry-pressed brick, is now in operation. The equipment at this yard is quite old and simple, but the clay deposit is large and very good. Mr. C. S. Cherry is now in charge of the plant for the administrators of the Anson estate. Mr. Cherry is the son-in-law of Captain Anson, of baseball fame. It is the intention to erect a modern pressed-brick plant on this valuable property. There certainly seems to be a good opening for the venture, as there will be a large territory to supply. At the present time there is a lack of pressed brick in Iowa. The field is an excellent one, and it is likely that it will be developed in the near future.

A. Hawkeye.

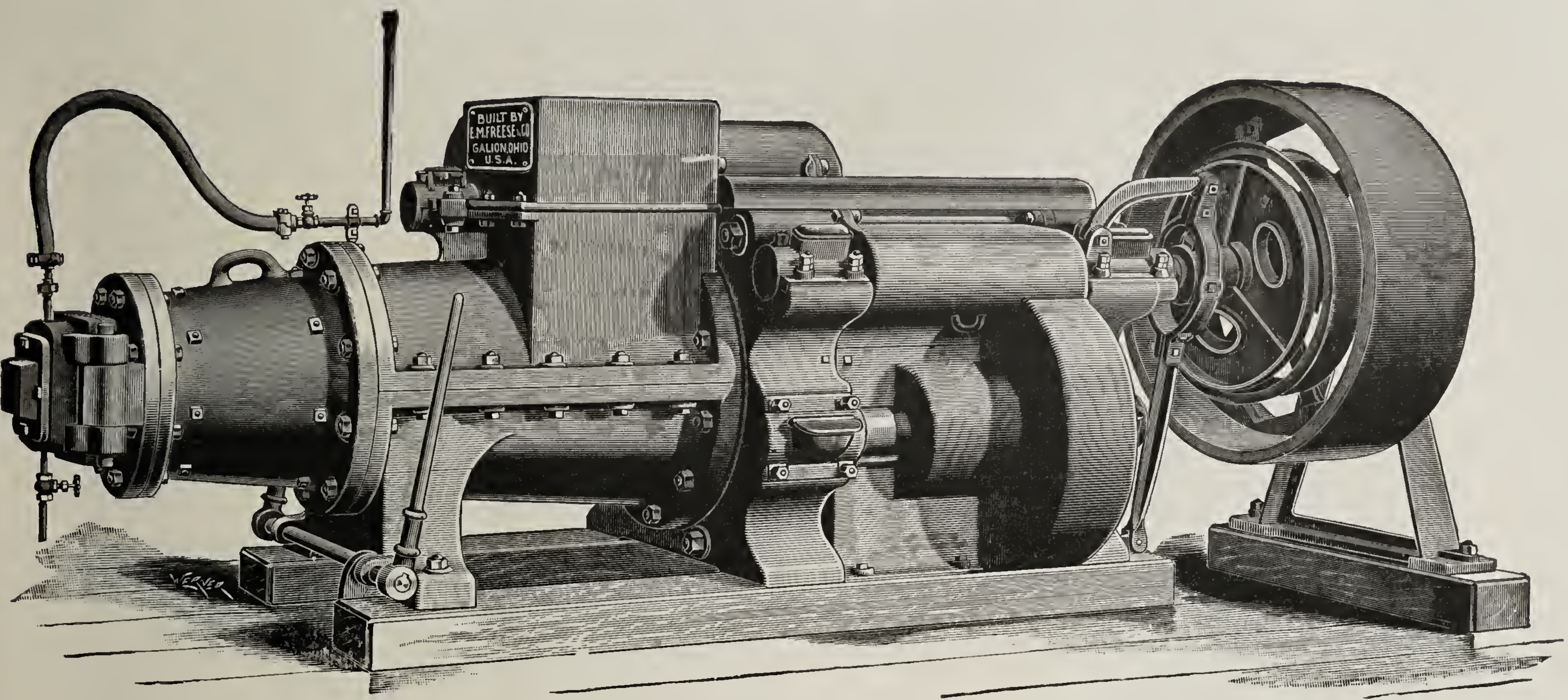
OPEN-AIR DRYING.

An interesting leaflet setting forth the merits of the Drymore system has been received from the Drymore System Company, Seventh and Chestnut streets, St. Louis, Mo. It contains some excellent views of brickyards, showing the system in operation. Those of our readers looking for an economical method of handling stiff-mud brick are requested to write them for a copy.

RENOVATION.

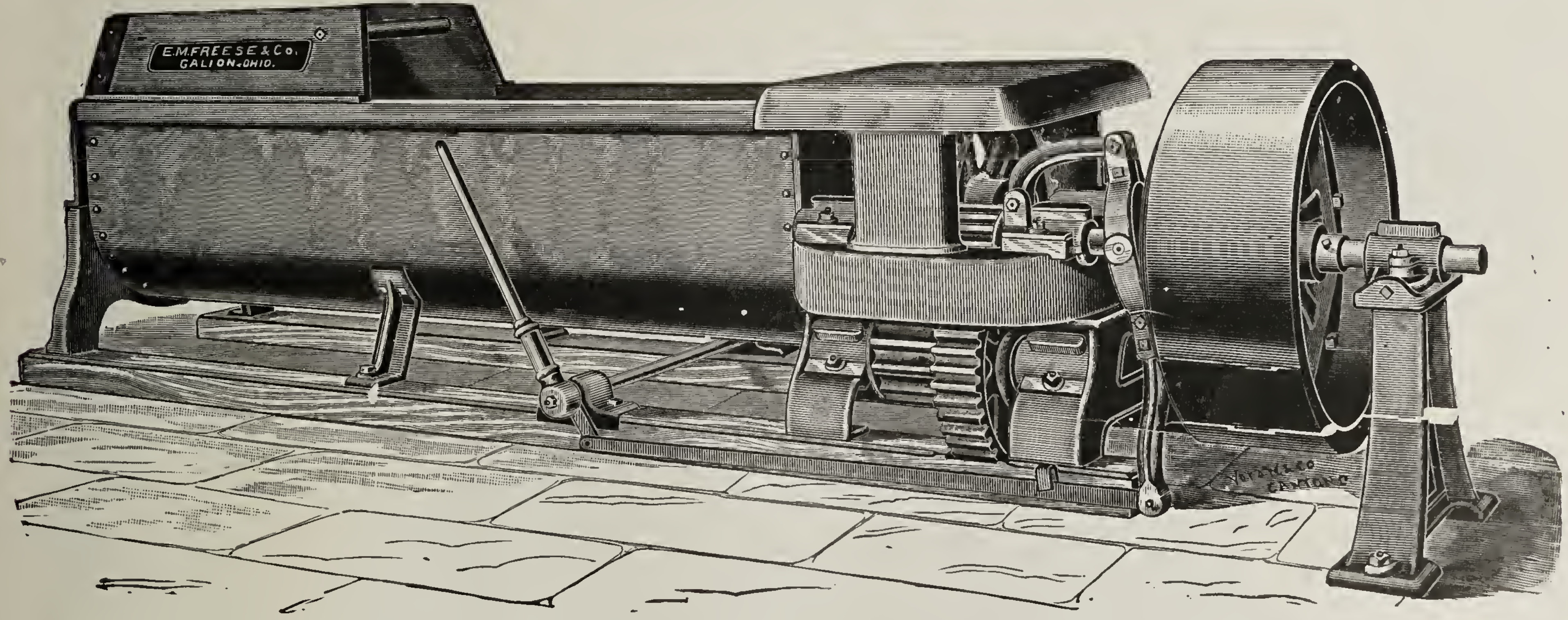
The packers now are cleaning up.
  You bet they know what they're about!
Oh, 'tis a bitter cup to sup;
    But
  'Tis better than to be cleaned out.

Our Mammoth Brick Machine


BUILT BY
E.M.FREESE & CO.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

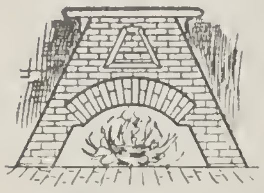
THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitetd for making a fine quality of brick.

E. M. FREESE & CO., - - Galion, Ohio.

See Ads on Pages 940 and 941.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.



ACCORDING TO the report of the superintendent of buildings for this city, there was not as much building started last month as in May of 1905. There were nine fewer permits issued this year, and the difference in value was $197,847. The figures for the past month were 460 permits, the total cost of buildings to be $910,570, of which fifty-four permits were for brick buildings, the value of which will be $363,450. The cause of this decrease in the number of building permits for May is said at the Builders' Exchange to be caused by the higher price of material and labor and the prospect of strike troubles.

It was thought through the month of May that there would certainly be a strike of the carpenters and the plasterers on June 1, but that date has passed and there was no trouble, and it is now thought that there will be no labor troubles here for the balance of this year.

As far as brick is concerned, it seems to make no difference whether the volume of building drops off or not, as all plants are turning out all they can, and are selling as fast as they can make them. The demand is said to be ahead of anything ever heard of before, and those who are posted state that there will be a great many more brick used here this year than last, and millions more used in this trade territory; in fact, the percentage of increase in consumption will only be limited by the ability of the plants to turn out the goods.

In this market there has been an advance of about $1 per thousand for common brick over the same season of last year, and it is said that not only every plant in the city is booked for all it can burn, but every plant in the Kansas gas belt is booked away ahead, and dealers here state that it would be as safe to say that there is not a plant in the Kansas gas belt which has not been offered orders for 10,000,000 more brick than it could produce this year.

Last year there was a feeling that the boom in building brick buildings in this section of the country was well along, and that there would be a great dropping off in the demand. That was the reason it was thought possible to form a brick trust and buy up all the plants, and if such a trust had been formed and the price had gone up as much as it has already this year there would have been a great howl from all quarters. As it is, the trust failed to materialize, and the plants are having all the business they can take care of without cutting each other's prices.

It has long been said that a day of reckoning was close at hand, as there were too many brick plants in the Kansas gas country; that as soon as the demand let up a little there would be a good many failures, but the demand has remained so strong that even the mismanaged plants are working regularly.

There is said to be plenty of room in the Kansas gas belt for several big brick plants which are operated by practical men, who can take advantage of everything and turn out brick at the lowest cost of manufacture, and while there is a big demand for all the brick they could produce now, and may be for years to come, so far as can be seen now, should hard times come and the building cease partially, a plant that could be operated cheaply could still make a good profit and keep the others from doing business just because of the possibility of cheapening the cost of production in favored locations.

The Kansas Supreme Court has handed down a decision which declares valid the tax bill paving law of that State passed a couple of years ago, which provided that cities of 50,000 population or over could pay for pavements by tax bills instead of by special improvement bonds. This will loosen up paving again over there, as all paving has been waiting on this action.

The demand for paving brick still continues to be exceptionally good. Cities in this section of the country have much paving planned for, and a good many of them are having it laid. They are not waiting for fall, but are getting their brick on the ground, and paving brick manufacturers are convinced that their plants will be unable to supply the demand this year, in spite of everything they can do. Usually they are stacking up brick at this time that they have no orders for, with the expectation of having a big demand in the fall, and they have never been disappointed. Now they are getting orders for them as fast as they are made, and there is no accumulation. Some plants report that they are away over-sold already.

The Kansas City Paving Brick and Tile Company reports that it has just sold the Metropolitan Street Railway Company 750,000 paving brick for paving between its tracks on Fifteenth street east to the city limits. This company has been selling a good deal of brick here for use in paving alleys, etc., but there have been no brick paved streets of late. It is possible that East Fifteenth street will be paved part of the way with brick, however.

The Kansas City Hydraulic Pressed Brick Company is reporting a big demand for face brick, and several good sales were made in Kansas. They have just landed the contract for furnishing the face brick for the Rawlins county court house, in Atwood, Kan.

Walter S. Dickey, of the W. S. Dickey Clay Manufacturing Company, is to again be chairman of the executive committee of the State Republican committee.

The Kansas City Paving Brick and Tile Company reports that it has managed to keep its plant going, in spite of the coal strike, but that several kilns of brick had to wait for a while before they could be burned. They are in good shape as far as fuel is concerned at this time.

The Pittsburg Brick Company will soon be able to increase the output of its Pittsburg plant, as they will have a new steam shovel in operation before the end of this month, and the old shovel will be sent to the plant in Sycamore, Kan. New tracks will also be laid in Pittsburg and a lot of new cars put in service, so they will be able to take care of the dirt as fast as the shovel can deliver it. Then it will be up to the plant to keep the shale grinding.

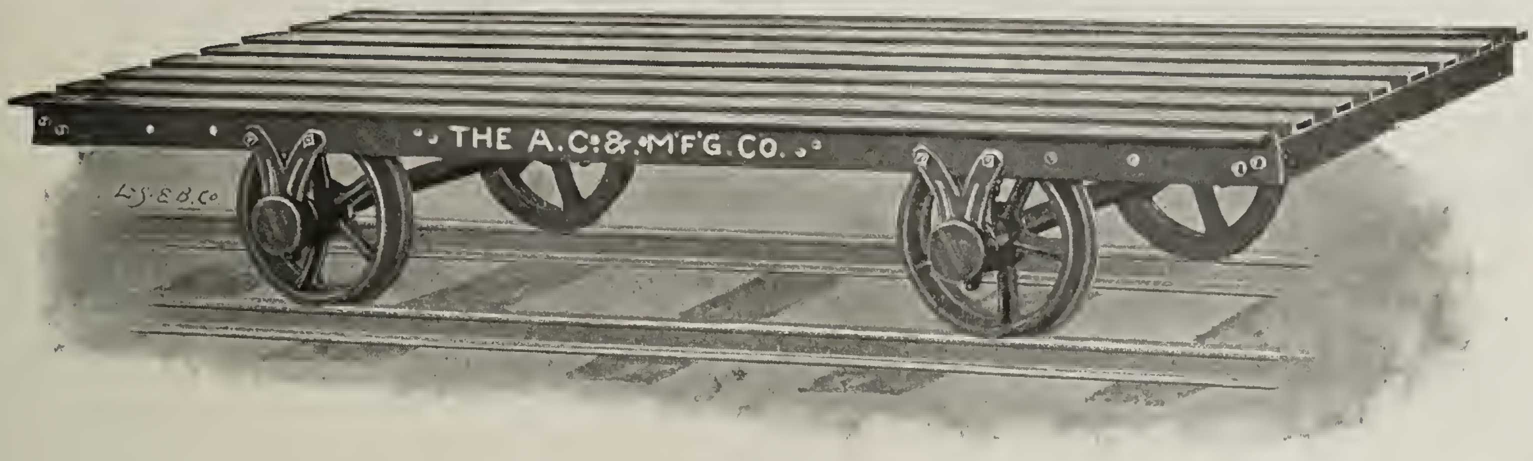
The State Warehouse and Railroad Commission of Missouri has issued an order compelling the Chicago & Alton Railroad Company to construct a switch track to the brick plant of the Flanagan Bros. Manufacturing Company.

The Pittsburg Brick Company has landed the contract for 1,250,000 of its noiseless paving blocks for the streets of Wichita, Kan., and the delivery has already begun.

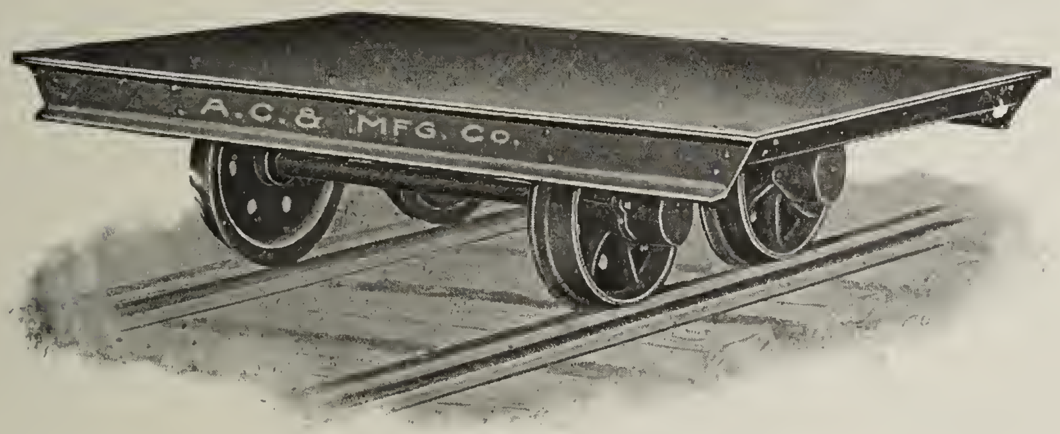
Beaumont, Texas, is setting an example of good government to other cities. The only trouble with most other cities is they cannot follow the example because they have not the same class of business men in their City Council. Beaumont has a City Council composed of the best business men and financiers of the city, and they are conducting the city's business along the same line they would if it was their own business and they were trying to make a profit out of it. They decided to experiment on paving and hired a competent man as foreman and placed an order with the Pittsburg Brick Company for a quantity of their noiseless paving blocks. The experiment was satisfactory, and they have increased the order to 700,000 blocks and are going to keep right on with the good work they have begun. K. A. W.

PAVING BRICK WANTED AT LAPORTE, INDIANA.

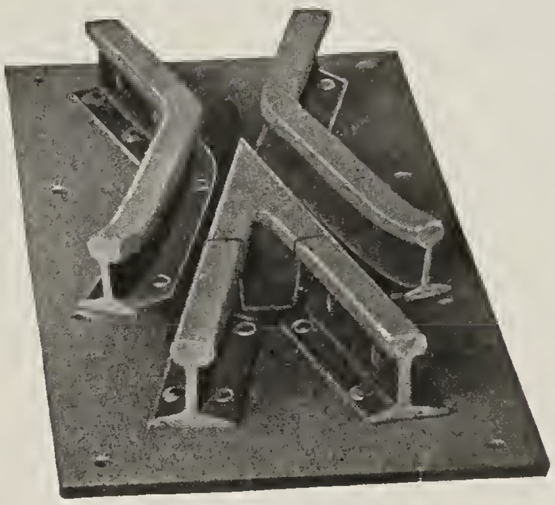
C. H. Martin, City Engineer, LaPorte, Indiana, writes that bids are desired for 36,000 yards of brick pavements. The people of LaPorte know from experience that brick pavements are the best and most economical.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



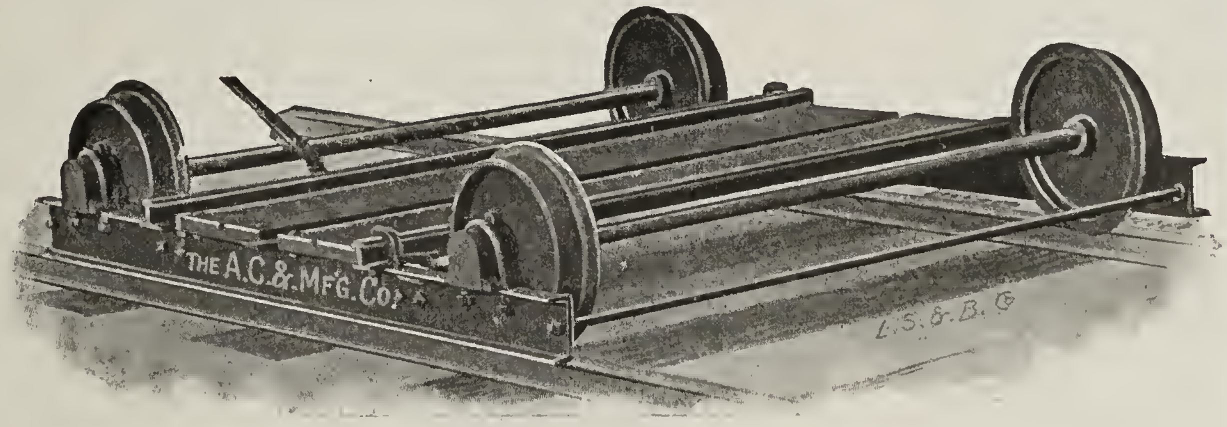
No. 1025. Steel Frog.

The Atlas Car & Mfg. Co.,

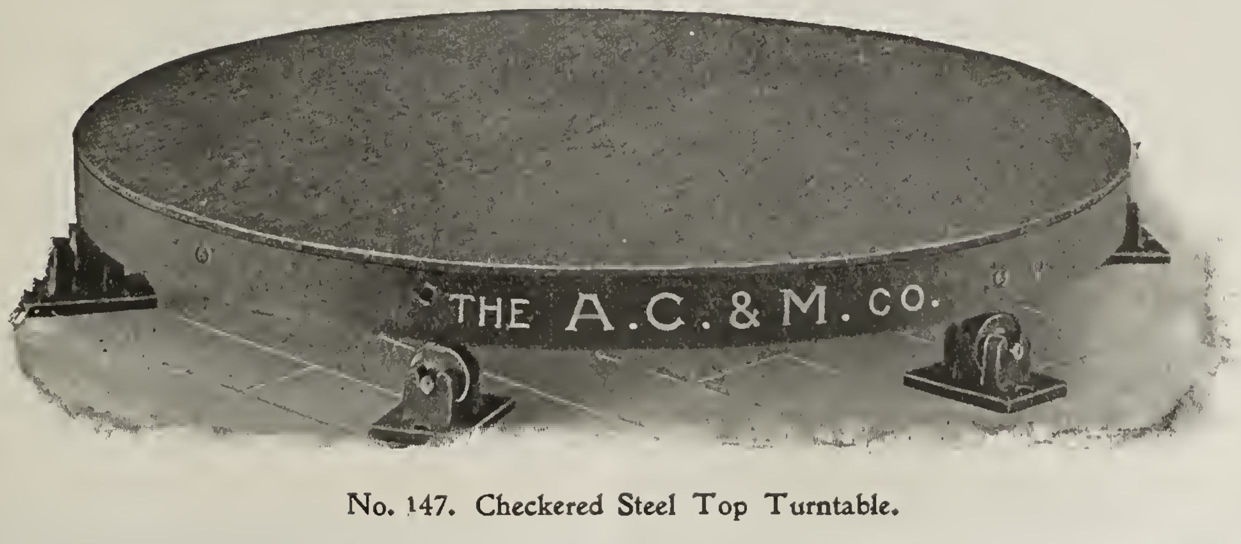
CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc Also Transfer Cars, Turntables, Clay and Dump Cars.

No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

See Ad on Page 826.

EDITORIAL NOTES AND CLIPPINGS.

Graettinger, Iowa, is to have a brick and tile plant of 10,000 daily capacity.

The Dallas City (Ill.) Brick and Tile Company has been incorporated by Edwin, Frank and Rosa Kieffer.

The Carolina Clay Company has been incorporated to manufacture brick and other clay products at Bryson City, Tenn.

George T. Chambers, Malta, Mont., is in the market for some brick molds, barrows, etc., and will be pleased to receive catalogues, etc.

The Erie Brick Company, Buffalo, N. Y., has filed incorporation papers. The directors are L. B. Dorr, B. F. Davidson and A. Bartholomew. Capital stock, $75,000.

Philip Zeh intends to start a brickmaking plant at Thief River Falls, Minn., on a tract of land on which an excellent deposit of clay is located.

The Harper Brick Company, of Kinkora, N. J., has purchased the plant of the Milltown Enamel Brick Company, Milltown, N. J. The plant will be enlarged and put in operation at once.

The Albuquerque (N. M.) Pressed Brick Company has been chartered to manufacture brick and tile. The incorporators are W. J. Johnson, B. Ruppe, E. C. Allen and others. Capital stock, $20,000.

The Vallejo Brick and Tile Company has filed articles of incorporation at Los Angeles, Cal., and certified to $100,000 capital stock. F. M. Knapp, A. Michel, George C. Davis and C. Rilliet are interested.

Ground has been broken for the new factory of the Newcomerstown Brick and Tile Company's plant at Newcomerstown, Ohio. The work will be carried on under the personal supervision of D. D. Lewis, of Syracuse, N. Y., president of the company.

The Veedersburg Brick Company, Veedersburg, Ind., has filed articles of incorporation, with $10,000 capital stock. The directors are Miles Marshall, Walter D. Marshall and Clinton B. Marshall, of Veedersburg, and Herbert and Horace Hood, of Toledo.

A. R. Batley, of Pittsburg, Kans., a well-known "missionary," who has been out of the saddle for a couple of years, writes that he recently completed arrangements whereby he is to again represent the American Clay Machinery Company, of Bucyrus, Ohio, on the road.

I. R. Lamport, Rich Hill, Mo., representing Kansas City capitalists, will locate a brick plant in the Kansas gas belt, and will be pleased to receive catalogues and quotations for both dry-press and stiff-clay machinery and other supplies for a 60,000 to 100,000 daily capacity plant.

The plant of the Manitowoc (Wis.) Clay Product Company, including the machinery and boiler room, dryers, kiln sheds and several outbuildings, was entirely destroyed by fire June 4. The loss is estimated at $20,000, on which there is an insurance of $10,000. The plant will be rebuilt at once.

The Owen brickyard at Plankinton, Mass., which has been idle for some time, was purchased, recently, by Tillapaugh & Trudeau, of Schenectady, N. Y., and the plant is now being put in shape for future operations. It is one of the oldest plants in that section, and has an inexhaustible supply of clay.

Mr. Lauren W. McCollum, who had been in charge of the sales department of the W. S. Dickey Clay Manufacturing Company, Kansas City, Mo., for the past seventeen years, died May 19, at the Macomb (Ill.) hospital, where he had been operated on for appendicitis. Mr. McCollum was born in Buffalo, N. Y., in 1853, and moved to Kansas City, some twenty years ago. He was well known to trade, having traveled extensively both in this country and abroad in the interest of the Dickey Clay Company. As a tribute to the memory of Mr. McCollum, the office and various plants of the Dickey Clay Manufacturing Company were closed the day of the funeral.

The brick plant of George F. Weaver's Sons, Utica, N. Y., was slightly damaged by fire, which started in the kiln sheds, early the morning of June 12.

The 50,000-gallon water tank at the Georgia Vitrified Brick and Clay Company's plant at Harlem, Ga., collapsed recently, causing a $1,500 loss.

Albert Teske, foreman of the Greiner & Corning brick plant at Chaska, Minn., caught his thumb in some machinery, and it was so badly mashed that it had to be amputated.

C. D., A D. and H. Baker have purchased the machinery of the Fergus Falls Brick Company, whose plant was recently dismantled, and will start a plant at Deer Creek, Minn.

The plant of C. E. Miller, York, Pa., was slightly damaged by a fire which started in the kiln sheds, as the result of an overheated kiln. The loss was entirely covered by insurance.

In a recent letter, J. W. Wells & Brother, Chattanooga, Tenn., write that their brick business has been very good the present season, but that the labor proposition is giving them much trouble.

The plant of the Kiesel Fire Brick Company, at Rochester, N. H., was burned to the ground recently, and one of the employes sustained injuries from which he died in a few days. The plant will be rebuilt without delay.

The Wallace Manufacturing Company, Frankfort, Ind., write that they have all the business they want; in fact, could not take care of any more if they had it. This has been one of the best years in the history of the company, and the inquiries and orders for the "Happy Thought" cutter (illustrated on page 937 of this issue) are coming in so fast that they are not booking any orders for same under sixty days' delivery, so they have reached the conclusion that they are not the only ones who think the "Happy Thought" is

[Continued on page 894.]

Annual
Personally Conducted

Niagara Falls Excursion

Via

Lake Erie & Western R. R.

The Pioneer Niagara Falls
Excursion Line

In Connection With The

Lake Shore and Michigan Southern Ry.

THURSDAY, AUGUST 2, 1906.

Tickets good returning on C. & B. Line Steamer, Buffalo to Cleveland, if desired.

Side Trips to

TORONTO, THOUSAND ISLANDS, Etc.

Also Cheap Rates to

SANDUSKY AND PUT-IN-BAY.

ARRANGE YOUR SUMMER OUTING FOR THE
FIRST OF AUGUST AND COME WITH US.

For pamphlet containing general information as to rate, time, etc., call on any ticket Agent of the above route, or address

S. D. McLEISH,
General Passenger Agent, Indianapolis, Ind.

East Ithaca Red Brick & Tile Company,

ITHACA, N. Y., Jan. 25th, 1906

The Williams Patent Crusher & Pulv. Co.,
Chicago, Ill.

Gentlemen:—

Please excuse us for not reporting to you earlier in regard to your Hammer Pulverizer.

The writer for the past twenty-five years has been in charge of different kinds of brick machinery and at different brick plants, and in fact I am thoroughly familiar with machinery, but I must say your Steam Jacketed Hammer Pulverizer stands at the head of the class for pulverizing clay and for pulverizing limestone pebbles where the clay is screened.

It is a rapid pulverizer, very strong and durable, it has given us the best of satisfaction and has improved our brick 20 per cent, as it puts the clay in such good and fine condition that it can be pugged easily and makes a fine grained brick.

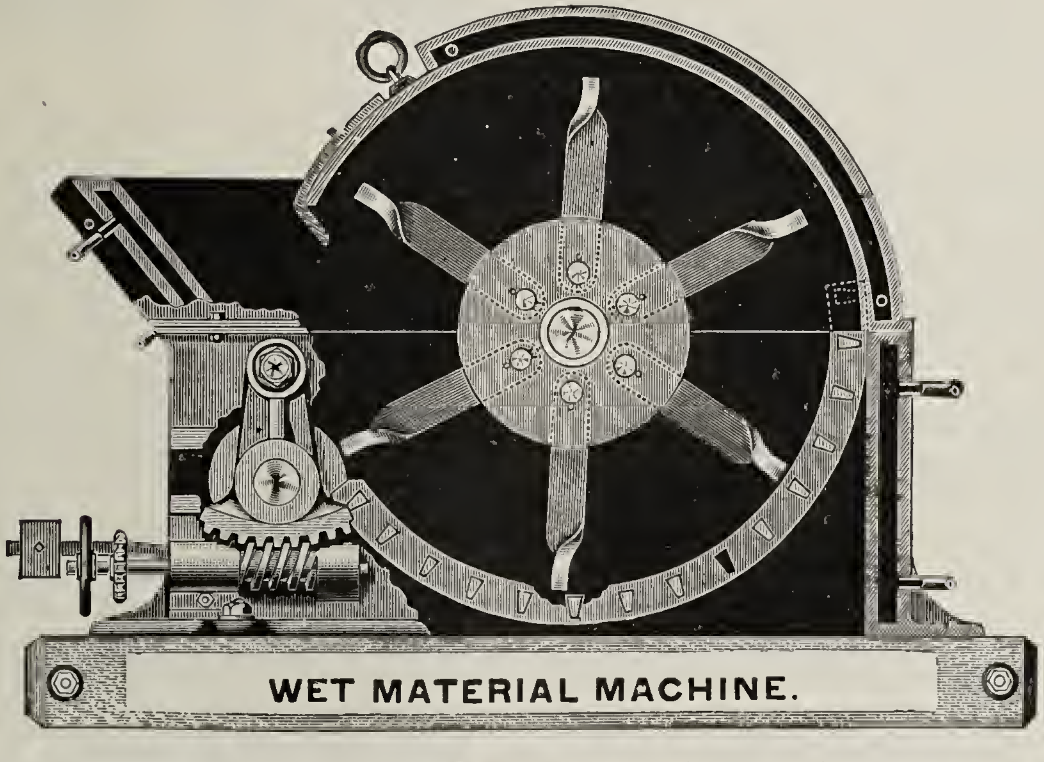
Wishing you a prosperous year, we remain,

Yours very truly,
EAST ITHACA RED BRICK & TILE CO.
per Geo. W. Cook, Mgr. & Supt.

FOR CLAY DIRECTLY FROM THE BANK.

U. S. PATENTS.

No. 544,336, dated August 13, 1895.
No. 11,634, dated Oct. 26th, 1897.
No. 590,748, dated September 28, 1897.
No. 589,236, dated August 31, 1897.
No. 604,485, dated May 24, 1898.
No. 646,249, dated March 27, 1900.
No. 646,250, dated March 27, 1900.
No. 646,278, dated March 27, 1900.
No. 657,998, dated September 18. 1900.
No. 711,688, dated Oct. 21st, 1902.
Nos. 30,347 and 30,348, dated March 14, 1899.
No. 726,602, dated April 28th, 1903.
No. 728,643, dated May 19th, 1903.
No. 730,503, dated June 9th, 1903.



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FOREIGN PATENTS

Germany, No. 105,777, dated August 31st, 1897.
England, No. 19,988, dated Aug. 31st, 1897.
France, No. 210,062 dated August 31, 1897.
Belgium, No. 130,788, dated August 31, 1897.
India, No. 434, dated Feb. 14, 1898.
Canada, No. 60,048, dated May 17, 1898.
Germany, No. 121,320, dated Aug. 28th, 1900.
England, No. 15,296, dated Aug. 28th, 1900.
France, No. 303,336, dated Aug. 28th, 1900.
Belgium, No. 151,807, dated Aug. 28th, 1900.
Canada, No. 70,732, dated April 26th, 1901.

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EDITORIAL NOTES AND CLIPPINGS—Continued.

"the" cutter, for it evidently appeals to the judgment of users of automatic cutters.

The plant of the Jacksonville (Fla.) Brick Company was almost totally destroyed by a fire recently, which started in the boiler room, entailing a heavy loss.

The Ireland Brick Company's plant, at Las Vegas, N. M., was completely destroyed by fire June 10. It is the only brick plant in the city and will be rebuilt at once.

The C. H. Klein Brick Company has just begun the erection of eight new kilns at Chaska, Minn. When completed the Klein plant will be one of the largest in the state.

W. J. Hemphill, general manager of the Evans & Howard Fire Brick Company, of St. Louis, died June 12 while on a visit at Jacksonville, Ill. He had been prominent as a railroad man.

George I. Wood, a brick manufacturer of Southridge, Mass., committed suicide June 6. Despondency over ill health is supposed to have caused the deed. He leaves a wife, one son and one daughter.

Roscoe L. Heafer and James C. Riley are interested in a company that is erecting a 50,000 daily capacity brick plant at Bloomington, Ill. The machinery for the same is being furnished by J. H. Hensley, of Indianapolis.

The Yoke Vitrified Brick Company is the name of a new concern that will erect a 250,000 daily capacity plant at Coffeyville, Kan., to be equipped with machinery from the shops of the American Clay Machinery Company, at Bucyrus, Ohio.

J. A. Salgue, foreman of the Bibb Brick Company, Macon, Ga., was found dead in his seat on a train arriving in Macon May 27. His death was evidently due to heart failure. It was thought he was asleep until an effort was made to arouse him when the train reached the depot.

The Bridgeton Brick Company, with headquarters at Bridgeton, N. J., and home office at Eatontown, N. J., has been incorporated. The incorporators are J. D. Fay, W. W. Ridgeley and Lyttleton Ridgeley. The company starts with a capital stock of $25,000. The authorized capital is $100,000.

The plant of the Montgomery Brick Company, at Waynesville, Ga., has been sold to a company backed by G. R. Krauss, of Brunswick, and W. A. Price and J. R. Whitman, of Waycross. J. A. Montgomery, the former owner will remain with the new concern, which will be known as the Wayne County Brick Company, as manager.

The American Refractories Company will soon have its immense plant at Rockdale, Ill., ready for operation. The company will make refractory materials only and, it is said, will be the only plant of the sort west of Pittsburg. The new company is capitalized at $150,000. Emil Winter, of Pittsburg, Pa., is president and E. M. Allen, of the same city, is vice-president of the company.

J. E. Carson, Charlotte, N. C., writes that he has his new plant now under construction. It will be equipped with machinery from the shops of Chambers Brothers Company, Philadelphia, Pa., and the Scott system of drying. The brick will be burned in a semi-continuous kiln. At present he will turn out common builders at the rate of 40,000 per day, but hopes, later on, to make vitrified pavers.

The Lawatsch & Latz Brick Company, of Kingston, N. Y., has just been incorporated with the Secretary of State to manufacture and deal in building materials. The capital stock is placed at $100,000, consisting of shares of $100 each, and the directors for the first year are as follows: Anthony H. Lawatsch and Emil H. Lawatsch, of Kingston, and August Welp and Henry Latz, of New York city.

John E. Pinkham, a prominent brick manufacturer of Dover Point, N. H., died suddenly at his home May 17 from heart failure. Mr. Pinkham was seventy-one years old and had been engaged in the manufacture of brick since early life. A widow and one son, O. L. Pinkham, superintendent of the Fiske Brick Company's plant, survive him.

P. L. Youngren, the kiln builder, of Milwaukee, Wis., writes that he is having an unusually busy season. He has just completed one of his twelve compartment kilns for the Minter City Tile and Brick Company, Minter City, Miss., and is now building a 40,000 daily capacity gas-fired continuous kiln for the Hatt Brick Company, Montgomery, Ala., which will be ready for operation about the middle of July. He also has under way the construction of a 50,000 daily capacity kiln for the Omaha Pottery, Brick and Tile Company, of Omaha, Neb.

Richard Graham, a well-known brick manufacturer of Massachusetts, died recently at his home in Lynn, Mass. Mr. Graham was fifty-eight years old and had lived in Lynn forty years.

The Clermont Brick and Tile Company has been incorporated at Biloxi, Miss. E. O. Thompson, J. A. Broadus and G. H. Combel are the incorporators. The company is capitalized at $50,000.

The Northwestern Tile and Brick Company, recently incorporated at Portland, Ore., will engage in the manufacture of pressed brick as soon as their plant can be completed. Later on they will make common building brick and tile.

The Scanlon Brick Company has been incorporated to manufacture brick at Crescent, N. Y. One of the largest plants in that section will be erected. John Scanlon, William R. LeRoy and George W. Whitney, of Cohoes, are the incorporators.

John Vick, of Chicago, is at the head of a movement to organize a company to establish a brick factory at Bryan, Texas. The clay has been tested and proven to be of a very fine quality for pressed brick, as well as for common builders. The plant will have a daily capacity of 25,000 brick.

Dr. W. O. Bunnell, Conyngham, Pa., writes that the company that was organized recently at that place for the purpose of erecting a large brick manufacturing plant encountered some difficulties with their lease, but they have settled same, and will at once begin the erection of the plant, which will have a capacity of 50,000 brick per day. They have three hundred acres of clay land on which the clay averages 33 feet deep.

The Ennis-Crisp Brick Company is the name of a new organization for which a charter has been applied for and which is to be located at Crisp, Texas, on the line of the Texas Midland railroad. The new concern is to be capitalized at $30,000, the stockholders being from Ennis-Crisp, Kaufman and Terrell. It is the intention to erect a first-class plant in every

[Continued on page 896.]

Parker's Gas Producer Continuous Kilns.

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Uniform burns. Simple construction.
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Bricks, Tiles and Terra Cotta, by Charles T. Davis. Price $10.00.

A Treatise on the manufacture of brick, tiles, terra cotta, etc., including common, pressed, ornamental and enameled brick, drain tile, sewer pipe, fire clays, fire brick, terra cotta, roofing and flooring tile, etc., comprising every important product made from clay.

The Brickmakers' Manual, by R. B. Morrison and J. A. Reep. Price $3.00.

An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

Sixty Years a Brickmaker, by J. W. Crary, Sr. Price $2.50.

A practical treatise on "Brickmaking and Burning," and the management and use of different kinds of clays and kilns for burning brick, with a supplement for beginners in brickmaking, and hints to bricklayers and builders.

Clay Glazes and Enamels, by Henry R. Griffen. Price $5.00.

With a supplement on "Crazing, Its Cause and Prevention," giving full instructions for glazing and enameling brick, terra cotta and pottery, including exact recipes and formulas for all the principal colors now in use, and also instructions for their preparation and application.

Tables of Analyses of Clays, by Alfred Crossley. Price $1.00.

Including analyses of chemically pure clays, well-known common and pressed brick clays, paving brick clays, fire clays. shales, etc., both in this country and England. A valuable book for those desiring to compare their clays with other well-known and standard clays.

Burning Brick in Down Draft Kilns, by W. D. Richardson. Price $1.00.

A manual on the "Burning of Brick," covering all the essentials of good burning, including chapters on kiln repairs, stages of burning, oxidation period, vitrification period, cooling, with valuable tables and illustrations of various testing apparatus.

Kiln Records, by W. D. Richardson. Price $1.00.

To establish a successful system of burning, observations and records should be made regularly, carefully and conscientiously, and this can be done to best advantage by the use of Mr. Richardson's Kiln Records.

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Vitrified Paving Brick, by H. A. Wheeler, E. M. Price $1.00.

A review of present practice in the manufacture, testing and uses of Vitrified Paving Brick.

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EDITORIAL NOTES AND CLIPPINGS—Continued.

respect, to be devoted to the manufacture of brick. The president of the company is A. J. Mullican, of Crisp, and the secretary is J. A. Clark, of Ennis

Damage to the extent of $1,500 was caused by fire at the plant of the Squirrel Hill Brick Company, Glenwood, a suburb of Pittsburg, Pa. The flames started in the kiln sheds.

A fire at the brickmaking plant of E. A. Poe, Fayetteville, N. C., destroyed the boiler room and dryer, causing a loss of $20,000. Mr. Poe states that he will rebuild at once, and hopes to have the plant ready for operation by the middle of June. The loss was partly covered by insurance.

Henry Dietchler, a partner in the firm of H. Dietchler Sons, brick manufacturers of Buffalo, N. Y., died at his home, in that city, May 20. Mr. Dietchler was 42 years old, and had been in the brick business ever since a very young man. He was unmarried and is survived by a brother and four sisters. He was one of the successful and esteemed business men of the city and was univesrally liked and respected by all who knew him.

Charging that he was sent in to shovel out dirt from a tunnel that had already caved in and a second cave-in buried him, broke his leg and injured his back, Louis A. Wilson has brought suit against the Los Angeles Pressed Brick Company, Los Angeles, Cal., for $7,480. The complaint alleges that while the plant of the brick company was shut down for repairs he was employed as a laborer and was sent to do work that was dangerous to his life, without due warning.

The American Fire Brick Company, Seattle, Wash., has bought an additional tract of ground, on which it will erect a warehouse and office, for the purpose of entering more largely into the fire and pressed brick business. The company is now constructing at Mica, Wash., a plant for terra cotta and dry pressed brick, which will be 100x160 feet and three stories high, and part of the output of this plant will be handled at the Spokane station.

The new plant of the Minter City (Miss.) Tile and Brick Company is now in full operation, and the first shipment of tile burned in the Youngren continuous kiln was made June 4. The plant has a daily capacity of four carloads of tile per day, and from present indications they will have no trouble to dispose of their entire output. The plant is operated under the management of Clarkson Cowgill, son of the proprietor, Samuel Cowgill, the veteran tile manufacturer of Indiana.

ALWAYS ROOM FOR ONE MORE.
"A $40,000 Pottery Trust has been organized."—News Item.

Written for THE CLAY-WORKER.

NORTHERN OHIO BRICK NEWS.

THE USUAL MID-SUMMER slack in the brick business of the year has begun; however, trade is considerably better than last season. For the year thus far, business is far ahead of the same period of a year ago, but there have been other seasons when the total business showed up larger. All the local brick plants are running.

The records at the office of the city building inspector show that 559 permits, with a total valuation of $1,912,932, were issued since the first of the year to June 1. This indicates wonderful building activity. March holds first place in point of the total valuation of the permits issued during the month for the year thus far, the total valuation for that month being $773,675. April stands first for the largest number of permits issued during the month, 161 being taken out. In further perusing the reports, it is very readily seen that the building operations for the year thus far have been very largely confined to the erection of residences and flat buildings, the majority ranging in valuations from $5,000 down, while quite a number have a valuation of from $5,000 to $10,000, very few being above the latter amount. This is indicated by looking at the report for May, which shows that only eight permits, with valuations for $10,000 and up, were issued during the month. The largest permit was for a brick and frame dwelling for Aaron Chesbrough, on Scottwood avenue, to cost $35,000; another permit for a brick and concrete structure for the Citizens' Ice and Cold Storage Company, on South Erie street, to cost $25,000; an addition of brick and wood to the school building at the corner of Detroit and Nessel, valuation $20,000; a brick flat building for M. D. Taft, at the corner of Monroe and Thirteenth streets, cost $15,000; another brick and frame flat building for C. G. Wilson, on Fulton street, cost $15,000; a store and flat brick building, at the corner of Sixth and Main streets, for C. E. Russell and Louise R. Hunter, cost $13,000; a store and flat brick building, at the corner of Starr avenue and Parker street, for H. A. Pilliod, cost to be about $10,000; a brick, cement and frame flat building, on Fulton street, for O. W. Holmes, costing $10,000.

That building operations are letting up is further indicated by the permits which have been issued at the inspector's office for the month thus far. Up to the 12th, only 27 permits, with a valuation of $50,000, were issued, indicating that the total permits by the end of the month will be less than 100, with a total valuation of less than $200,000.

ing of Whitney avenue with brick, the price being $6,050.

Garrigan Bros. have been awarded the contract for the pav-
The Hanlon Construction Company, of Cleveland, has been awarded the contract for the paving of North Main street, Gibsonburg, Ohio, their bid being $10,000.

Henry C. Ellis, aged 66 years, one of the oldest and most highly respected brick manufacturers in Toledo, died May 23, at his late residence, 1037 West Woodruff avenue. Mr. Ellis had been in failing health for some time, and last fall went to Arizona, remaining there through the winter, but returned to Toledo unimproved. Tuberculosis is given as the cause of death. He is survived by three daughters and one son. The son, Herbert J. Ellis, is in charge of the plant, and stated, a few days ago, that an incorporated company will be formed within a short time, under the name of the H. C. Ellis Brick Company.

T. O. D.

THE BOSS SYSTEM AT BRAZIL.

In the very interesting description of the Brazil (Ind.) Clay Company's plant on pages 728 and 729 of the May Clay-Worker, mention is made of the forced draft system of burning which has been installed there, and which is operating very satisfactorily. The system is what is known as the Boss system (see ad on page 911 of this issue) and our scribe's failure to mention that fact was an oversight. The Boss system is in operation on a number of the best equipped brick plants in Indiana, and has proven a great fuel saver.

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol XLVI. INDIANAPOLIS, IND., JULY, 1906. No. 1.

Written for The Clay-Worker.

THE LESSON OF THE SAN FRANCISCO DISASTER.

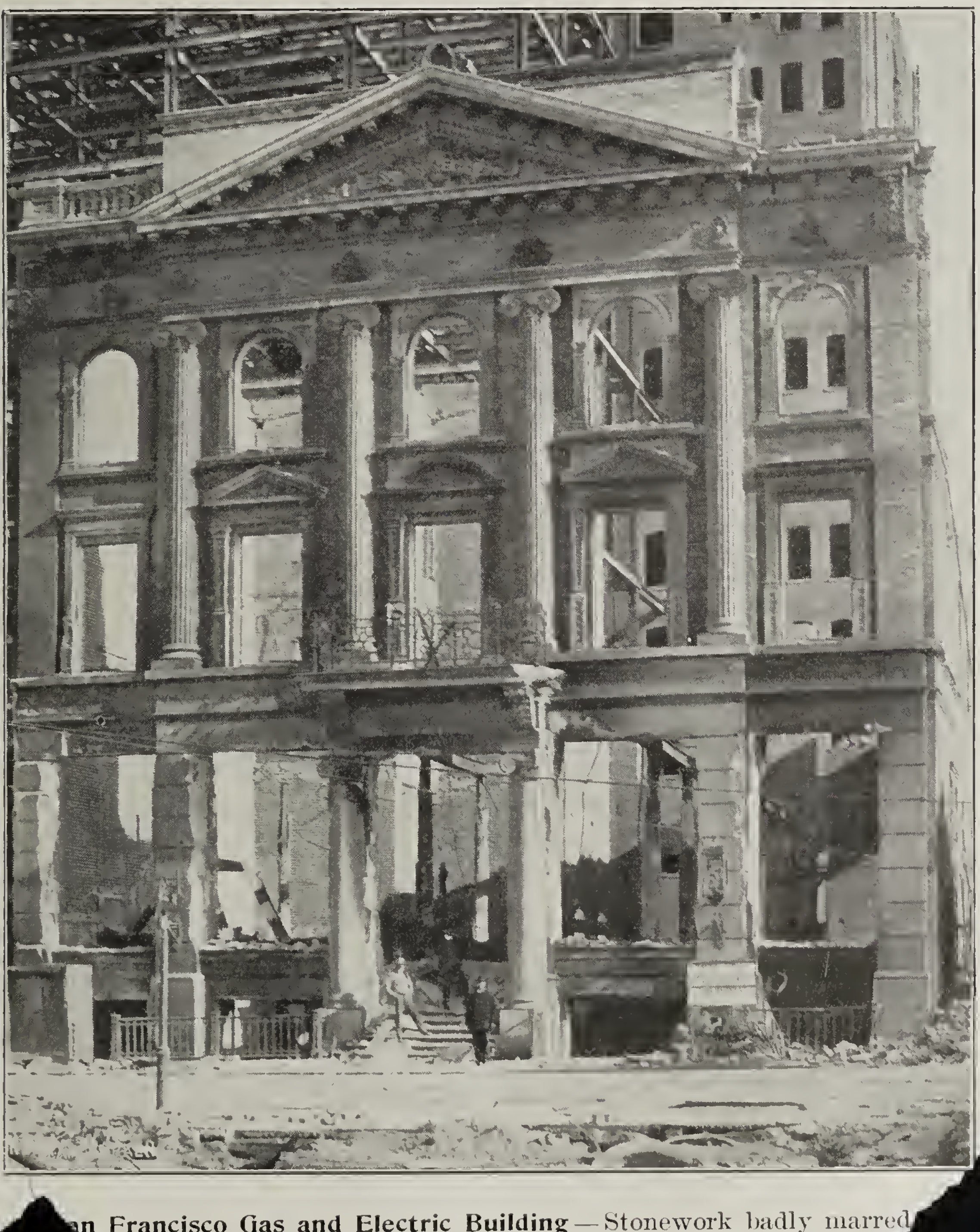
By F. W. Fitzpatrick.

Notes after a thorough investigation of the results of the San Francisco disaster, made as Executive Officer for the International Society Building Commissioners, the U. S. Government, the technical press, etc.

THE STORY of San Francisco's appalling disaster has been told and retold most graphically in the daily press and the periodicals; the suffering of the people, the heroism of a few fire-fighters, the wise military rule—all those details have been given us artistically and impressively—though no man can fully appreciate the extent, the thoroughness of the destruction, the disorganization of everything, affected by that disaster, who has not visited and spent many days in the stricken city. Building experts and fuglemen for various systems of construction have rushed into print with glowing accounts of how their particular material "saved" the little that was left of the once proud city, their "reports" differing but little from the first excited dispatches in the daily press that stated that thousands of people had been killed and that the big "fireproof" buildings were either toppled over or melting down like wax.

It behooves us, now that the first horror, the excitement, is over and it becomes a question of repairing the damage done, to dispassionately examine into the behavior of the different materials and modes of construction and learn something from the very forceful lessons such a conflagration must necessarily give us. In such a study, to be thorough, it behooves us to go back a little while and see how San Francisco was built. She was subject to earthquake shocks—very subject to them—and had every reason to expect one or many of far greater severity than the average. These little trembles had for effect that brick work set in poor mortar and improperly tied and bonded, little four-inch chimneys and veneering and such, were frequently thrown down, so that people got into the notion that wood was the only quake-proof material to use in building. And so they used it until the city became a veritable lumber yard, and the new danger was introduced — the fire hazard. Finally, the building laws, that always have been and are now a hodge-podge, compelled people within a very limited district to use brick or stone enclosing walls, though the framing, the internals, of far too high buildings could still be of wood. The insurance companies, innocently or foolishly, aided and abetted the growth of this fire hazard by writing insurance at an exceedingly low rate on San Fra cisco, because that city's espe fine fire depart

Less than t years ago the very tall b was buil steel gen b



an Francisco Gas and Electric Building — Stonework badly marred of building gutted, though brick work, columns and all, are perfe

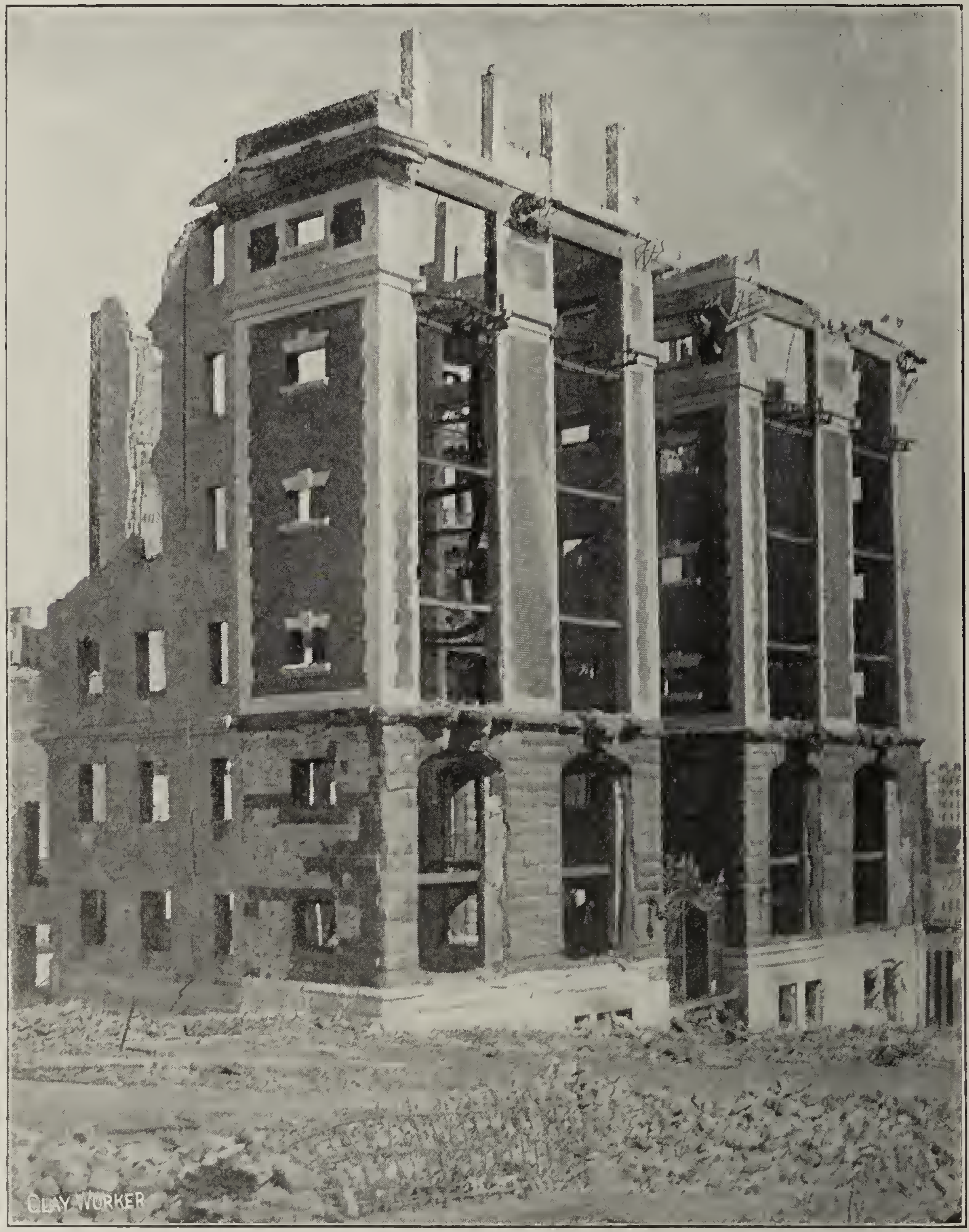
They expected the tall steel frame to topple over at the first shake. There was so much fuss made over the matter that the architects and engineers have done really very fine work in those steel frames; they are braced and trussed and tied so that though there was vibration and some action in the great quake, not one of them was materially affected, and what people had deemed the greatest risk was virtually the only thing that went through the experience more or less intact.

In those big buildings, however, the foundation and the steel framing were generally the only two things in which extra precautions were taken. The stone work, the brick work, the fireproofing, everything else about them, was no better done or more firmly tied, and in fact not nearly as well so as is common in the East, where quake is a very remote contingency. Nor was anything done, any extra precautions taken in those big buildings with one or two exceptions, to prevent the spread of fire in their contents, their finish, floors, etc., to the complete destruction of everything damageable by fire and even great injury to really fireproof details. They were "fireproof," those buildings, only in that steel work was more or less protected by tile or concrete, and the floors themselves and the partitions were either tile, concrete or some other patent plaster. That one detail constituted a fireproof building, and was expected by some mysterious or occult agencies to impart immunity to however burnable materials that were used in the rest of the structure. And none of that fireproofing, even, was done in accordance with our very best Eastern standards of construction

Such was the city and its state of unpreparedness when quake and fire, and dynamite in unskilled hands, sought to effect its utter and complete ruin. The surprise is not that the fire was so great, but that it stopped where it did and was as lenient with the big buildings as it proved to be. It was an all-searching fire, long continued, insistent, meeting comparatively little opposition and thorough in its work, though it was not at any time as fierce a flame or developing as high temperatures as the Baltimore fire, that was accompanied with a hurricane wind.

To this absence of high temperature in the big buildings is largely due the
fact that there was as little damage ef-
ted as we have to note, rather than to
special care and provision in their
ruction. Then, too, as in Balti-
, the fire was freaky. It would lap
d and linger about one corner of a building, and per-
ightly pass over the others, where as great damage
been effected; indeed, what little breeze there
ying the fire and the currents created by it
that, here and there, even a wooden build-
consumed, or perhaps but little affected,
still stand and occasionally a wood or
intact, while all about it is utter de-

iles of territory, seven hundred blocks, there are perhaps fifty buildings standing, in more or less damaged condition. The Appraisers' warehouse and the Mint were old-time structures, mostly iron and brick, and were undoubtedly saved by the efforts of the employes, who remained "steadfast at their posts" and used wet blankets, gunny sacks, anything at hand, to extinguish the blazes caused by falling embers or flames lapping through broken windows. Similarly, man power had much to do in saving the Postoffice, though that was of the newer and probably the best construction in the city. Most of the big steel frame buildings had all the damage done to them that could possibly be done, while some remained more intact than others by reason of a little more care in construction or by accidents or fire; but the wooden buildings, save in perhaps two or three instances of marvelous and mysterious escape, left little to tell the tale—a chimney here and there, or perhaps a front or a party wall and a few iron beams twisted into corkscrew shapes, and a mass of debris encumbering the street, are all that mark the site of some of the costliest and nearly all the "ordinary" buildings of the proudest city of our country.

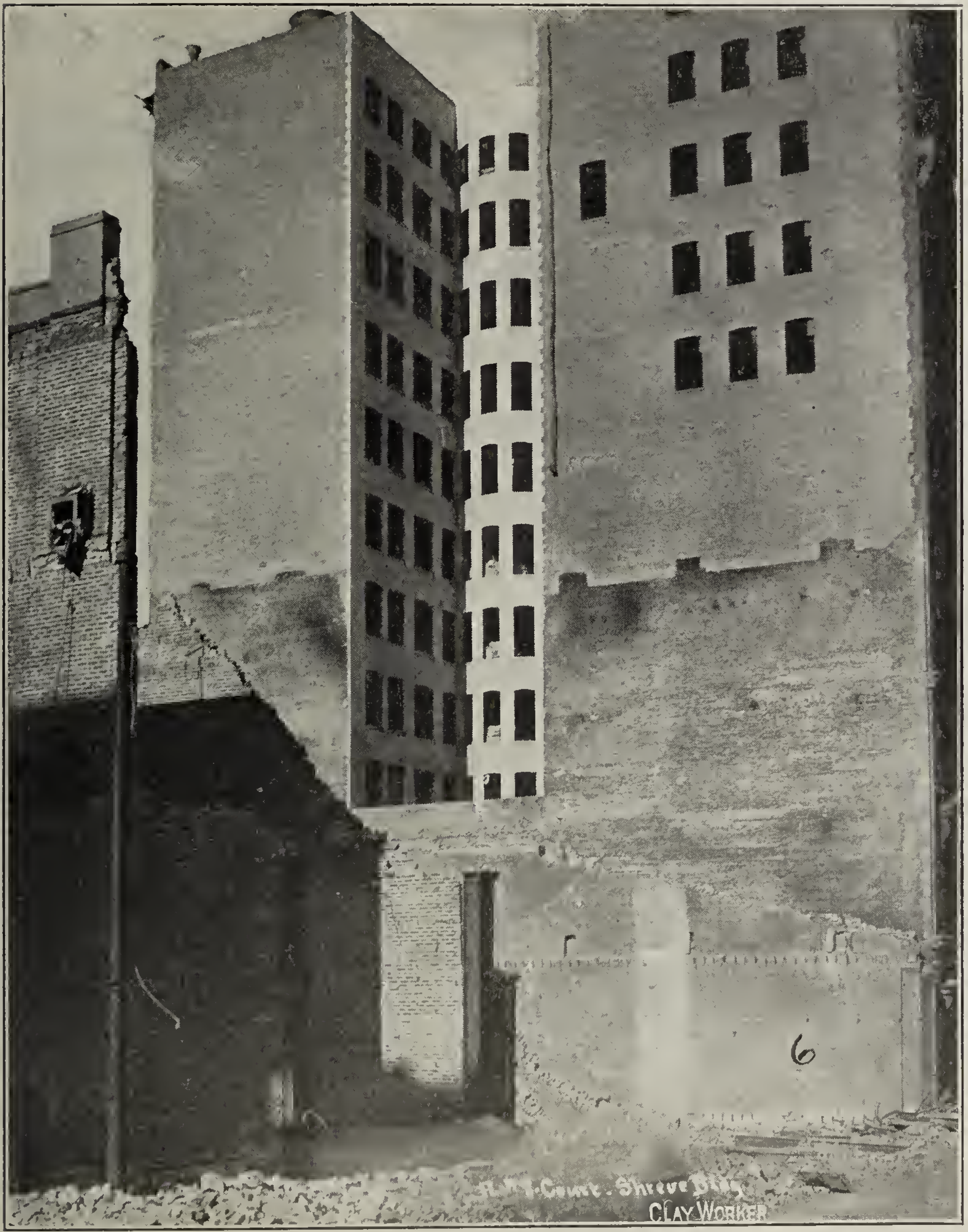


Shreve Building—Fire was hot enough to destroy adjoining buildings. Note perfect condition of brickwork, light court walls and all.

To the building expert, the one who knows the real significance of the term "fireproof construction," and who has preached it for years and been looked upon as a crank, a calamity-howler, there was mu
observe, theories vindi-

cated, lessons illustrated, and all that sort of thing, in San Francisco, but nothing new developed nor anything brought forth that would tend to change one's ideas of how things ought to be; though to the average architect who looks upon the matter of fireproof construction as something unattainable, mysterious, occult, the lesson of that awful fire ought to be particularly impressive, a revelation, an indice of what ought to be done and what ought not, far more potent than has been all of our preaching in these many years!

The steel frame and the foundation were well done in the big building; as high eulogium cannot be given to any other detail. The curtain walls, supported from story to story, were hardly ever properly and completely bonded, and seldom tied at all adequately to the steel frame. The result was that the quake cracked many of these walls and shook some out of place. Granite and stone and marble were used all too frequently externally, and wherever fire struck them spalling and irreparable damage ensued. Brickwork was seldom damaged so far as the brick was concerned, but lack of bond and tying and the use of lime mortar demonstrated that such was not the best practice, though the damage to the brick work of the tall buildings was remarkably slight, all things considered. Terra cotta, where well made, of equal thickness throughout all exposed parts, and with a sufficiency of web and stoutly tied in place, showed itself by a long distance vastly superior to all else for external decorative features; where earthquakes are so frequent it seemed like folly to lay a 2-inch tile protection around an important steel column, merely clipping with galvanized iron at the corners, and making these tiles part and parcel of the partition and set up often in lime mortar; the partitions were in many cases of but 3-inch tile, set either on top of the wooden floor, or on top of the concrete filling and wood strips, and were bisected in every direction with wooden lintels, jambs, sills, etc., so that it is really a wonder that anything was left of them; the floors were generally of side construction, particularly thin tile and of little depth, and all this tile work was of dense tile, the quality of the material, the mode of burning it, the pattern and way of supplying it not at all up to the standard of our best Eastern work. Yet this was all the architects demanded, it was what the market seemed to exact, and all that the manufacturers produced.



West Gate Apartments—Stonework literally melted away, though heat did not damage the iron gates. Note the perfect condition of enameled brick above.

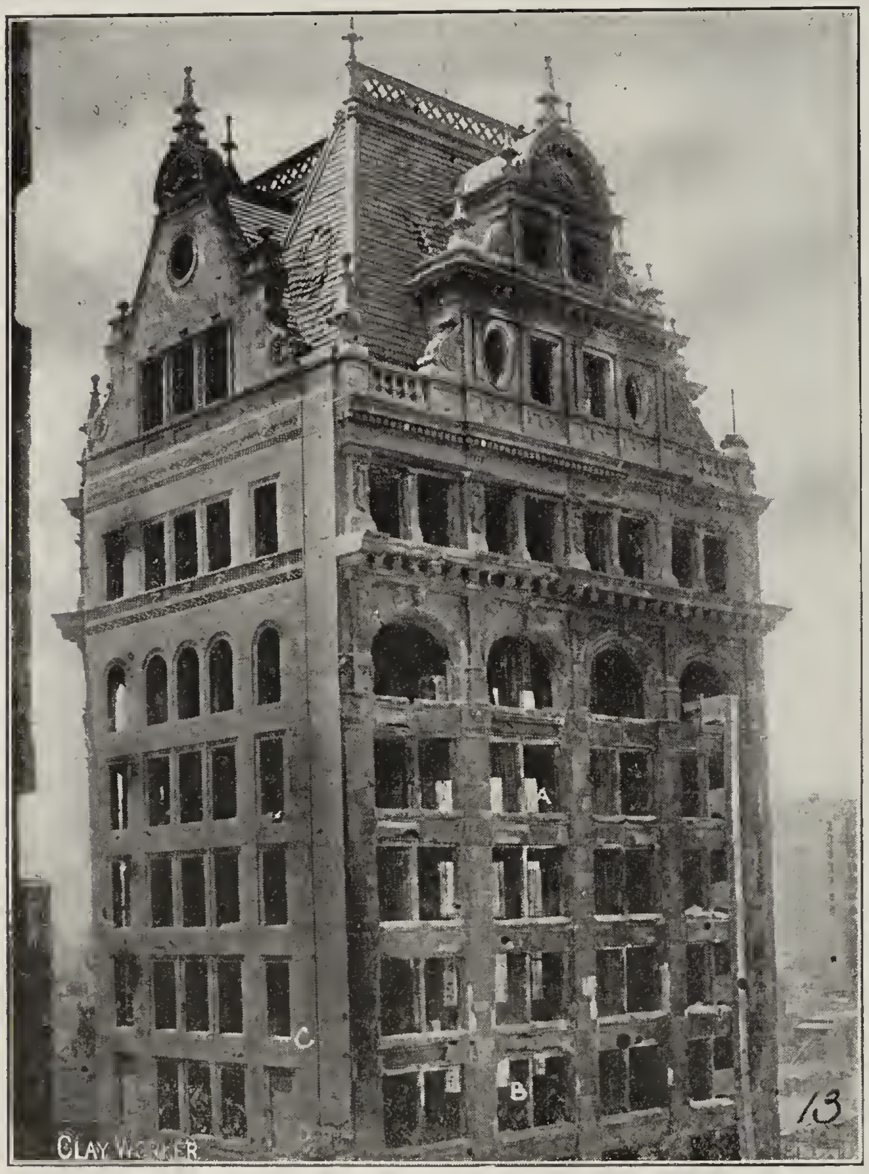
Their competitors, the two concrete systems most in vogue in San Francisco, were held up to about the same standard only, so that in most cases columns were fireproofed with a wrapping of expanded metal or wire lath, plastered over with a little cement, or in a majority of cases the ordinary wall finish; partitions were generally of wire lath and plaster, the floors of as thin slabs and as weak a concrete as would pass muster, though as luck would have it, most of these floors were in turn protected with a suspended metal and plaster ceiling. The surprise is, as I have said before, that fire did not do greater damage to the structural parts, and is accentuated four-fold when we realize that in many of these buildings the elevators are already in operation, people back in their offices, and decorators at work on the wall.

If all the work had been absolutely well done, what an illustration of adequate structural fireproofing could have been given! As for other than the mere fireproofing of the structural parts, not one of those buildings was fireproof in design, save in one or two of the details. Not one of the tall ones had their elevator shafts and stairs enclosed, so as to confine fire to any one story; only one had metallic doors and trim; all had wooden floors in their offices; not one had wire glass or other protection to its windows; and fire was communicated to the interiors of buildings through their windows in ninety-nine cases out of an hundred.

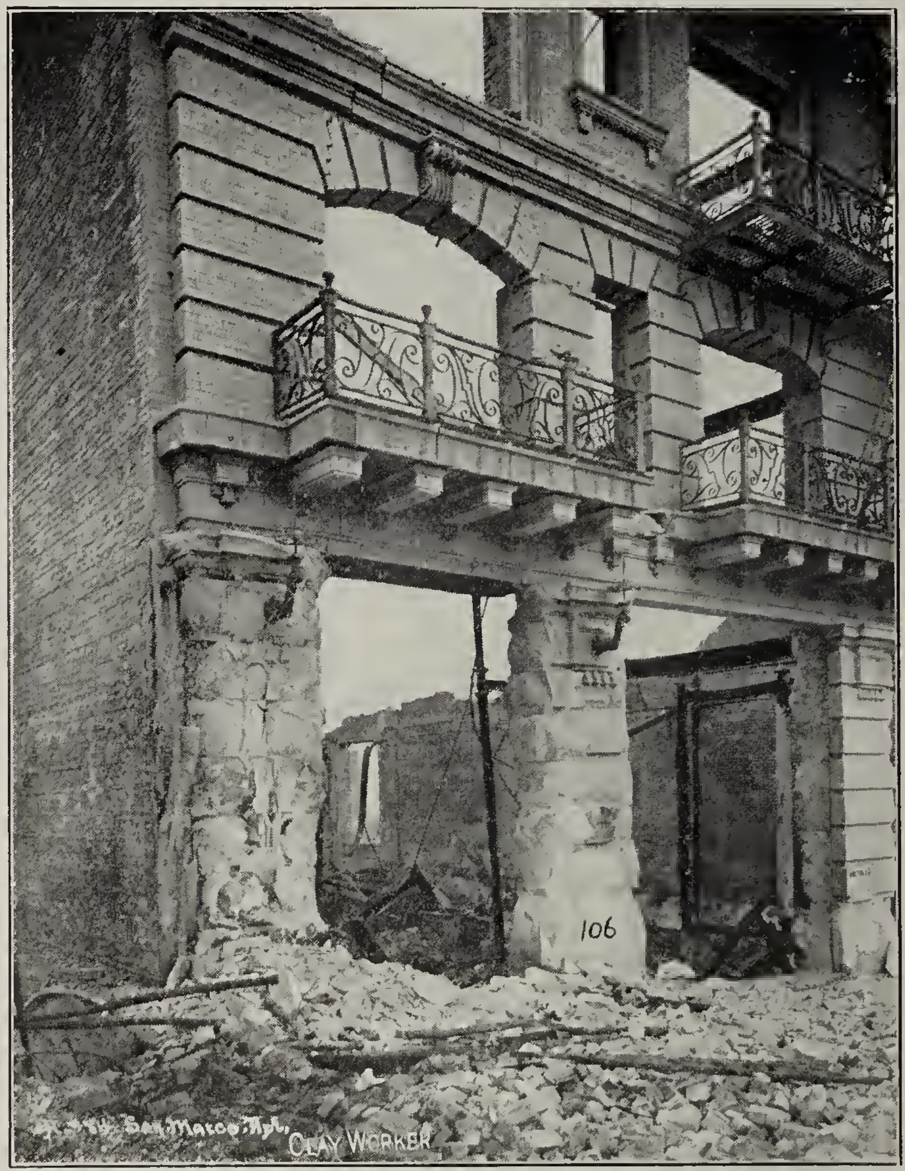
One building there was, though of wooden frame and finish enclosed in brick walls, in which they had been wise enough to install wired glass and metal sash at all the windows; the fire attack was altogether from without (for the faithful employes successfully battled with the little blazes on roof or in woodwork adjacent to window or door), and the efficacy of the wired glass is proved by the fact that men were at work at their usual places on what they had left the day before, the day after the fire. Yet in another building nearby, of exactly the same slow-burning construction, but unprotected with wire glass windows, the destruction was absolutely complete and just forty minutes slow.

In all this devastation there is enough left, particularly in and about the big steel frame buildings, to fully demonstrate the efficacy of all we have clamored for in times past. No one building was absolutely perfect, nor was any one building absolutely saved from damage (albeit the new Chronicle and the Call suffered certainly less than 5 per cent. of their cost), yet so many details, found separately, did their work so well that it must be perfectly patent to the most obtuse that if those details were assembled in any one structure that structure must necessarily be fireproof and undamageable in all its parts. The question, appalling as that lesson was, is it forceful enough to get our architects out of the ruts that they cling to so tenaciously, principally the wooden rut?

For any city, the standard of perfection remains the same, though for San Francisco extraordinary pains should be taken to tie and to bond everything superlatively well against the ever present possibility of the recurrence of as severe a quake. My ideal of a perfect building, a fireproof building in the fullest sense of the term, is one whose foundations are sound, and if in yielding ground, supported to bottom on reinforced concrete piles; my foundation piers and walls would be of concrete, externally lined with strenolith against moisture; my steel frame would be rigidly braced and tied, and whether painted or not, well coated with cement and incased in every void with brick or tile or concrete, and the whole protected with hollow tile fireproofing, laid in cement mortar, bonded and tied to the column and with not less than 2 inches of material between any possible fire and the metal members; my structural floors would be of narrow span, deep end construction fireproofing tile between steel beams, or if concrete is particularly desired, then a sufficient depth of that material, protected on the under side with fireproofing tile, the top surface of marble or cement or some plastic body, not wood. My partitions would be of hollow tile, my outer walls would be of concrete or brick, faced on both sides with brick, well laid and bonded; my external decorations would be of terra cotta, of ample thickness and properly made, no granite or stonework or marble would I have where fire could assail it; my stairs and elevators would be enclosed, absolutely cuting off every story by itself, and my units of floor space would be as small as possible, so as to restrict fire to the contents in a much curtailed area; my window and door trim and doors and finish and my office furniture would be of metal, nor would there be any wood lintels or door jambs in the partitions; my windows would be glazed with wire glass in metal or asbestos frames, and there, where the exposure is great, I would have doubled thickness of wired glass; and last, but not least, in assembling these parts, I would endeavor to use intelligence in design.



The Mutual Savings Bank—Note how the stone work has gone and how the terra cotta gable has stood.



San Marco Apartment—An object lesson: Fire effects upon stone and brick works, respectively.

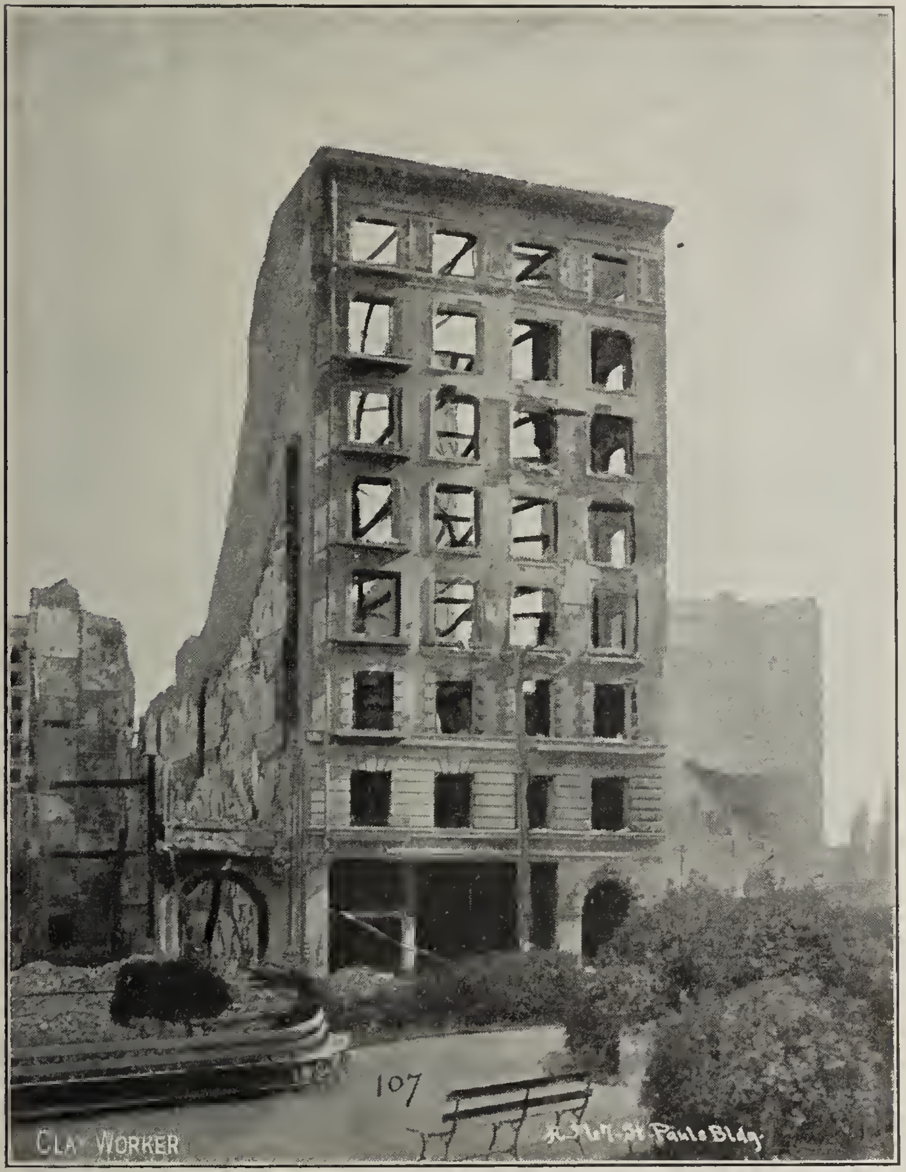
Each one of these details, even the last, has been fully tested and found not wanting in the San Francisco and other fires. The thing is to get them all together and the resultant building will be one that indeed merits the term "absolutely fireproof," a building that in first cost will but little exceed the price of the flimsiest construction, and that in ultimate cost is infinitely less than the latter, and it will prove its own insurance, the greatest safeguard to the individual and to the community, the principal step taken towards the much-desired goal, the "City Unburnable."

White Cement.—After many unsuccessful experiments, Julius Gresby, of the cement factory, Lieberg, in Switzerwhite cement has already taken the place of plaster and other binding materials, and was recently awarded the gold medal at the International Exposition, at Liege, which has just closed.—*Tonindustr. Z. No. 1224, 1905.*

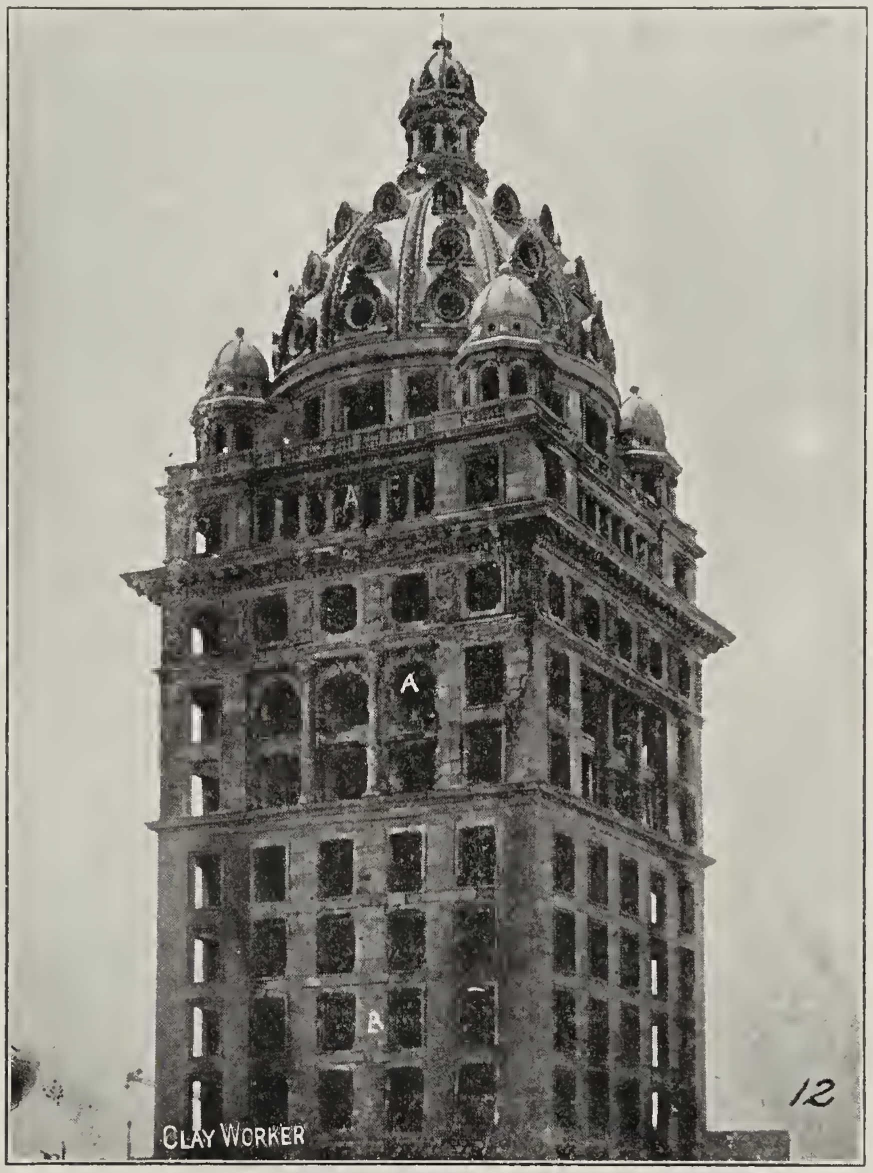
Written for The Clay-Worker.

NEW BUILDING ORDINANCE IN 'FRISCO.

On MONDAY, July 2, the San Francisco Board of Supervisors finally passed and the Mayor signed the new building ordinance, and the temporary building era may now be considered as having been succeeded by the era of permanent construction period. The building ordinance is on the whole not exactly what the brick and terra cotta people could have wished, but it at least gives the contractors and property owners a definite plan along which to proceed. One feature of the ordinance, which many consider to be of doubtful expediency and which some claim is fraught with grave danger, is the admission of concrete on a par with brick. In the construction of the various classes of buildings, no specification is made as to the materials used for walls, floors, roofs and partitions, other than they shall be of "incombustible materials" in all buildings within the fire limits. This is modified by clauses regulating use of both brick and concrete.



St. Paul Building—Average condition of stone veneered and stucco faced buildings.



Call Building—See how the stone work at A and B has gone. How well the terra cotta dome stood.

As regards brick, the ordinance provides that brick walls shall be at least eight inches thick; that brick shall be laid either in cement-lime or cement-mortar; that all brick except on the face shall be completely surrounded with mortar; that every sixth course shall be a heading course, and that all brick walls shall have a supporting part of the steel frame, which shall extend to within two inches of the face of the wall.

In regulating the use of concrete, the ordinance provides that all reinforced concrete walls shall be at least six inches thick; that if the area of wall surface included between two adjacent columns and adjacent floor girders is between three hundred and four hundred square feet, the thickness of the wall shall be at least eight inches; that if such area exceeds four hundred square feet the thickness shall not be less than twelve inches, the walls being supported on steel frames at each story, and that if the concrete be not reinforced all walls shall be at least twelve inches thick. The ordinance also provides that in reinforced concrete walls the area of steel reinforcement shall be at least one per cent of the area of the concrete, one-half to be placed vertically and one-half to be placed horizontally, and that no reinforcement shall be spaced more than twelve inches apart. Additional reinforcement is to be placed around all openings, all reinforcement is to be wired at each intersection, and to be rigidly connected at columns and girders to the steel frame.

The advocates of the ordinance claim that with the above restrictions the use of concrete is rendered safe as against both earthquake and fire. Some engineers, however, consider that the use of concrete being still in the experimental stage, it should not be permitted to enter into the construction of tall buildings, even with the precautions enforced. Brick men, however, seem to be generally indifferent, and while they admit that a good many reinforced concrete buildings will probably go up in the immediate future, they do not believe that property owners as a whole will be willing to experiment with concrete when it comes to building really first-class structures.

The limitation of the height of buildings in the new ordinance is also causing some dissatisfaction. Class A buildings (those built of incombustible materials with a steel frame supporting all floor and wall loads) and class B buildings (those built of incombustible material, but in which reinforced concrete columns may be used in place of steel, and in which the walls are self-supporting) are limited in height to one and one-half times the width of the street on which they front. Class C buildings (those which have incombustible walls, but in which other parts may be of combustible materials) are limited to eighty-four feet in height, no building of this class to be higher than one and one-half times the width of the street on which it fronts. It is an open secret that this rather severe limiting of the height of buildings was intended as an indirect method of forcing property owners on narrow streets to consent to the widening of those streets. It will cause a number of alterations to be made in plans for tall buildings which have already been announced, but many builders are inclined to look upon it with favor.

New Brick Buildings for San Francisco.

The following buildings for which plans have already been drawn and for which permits have in some cases been granted will be put up at once: For M. Friedman, a ten-story steel, stone and brick building at the corner of Bush and Kearny streets, to cost $180,000; for Frank W. Burk, a six-story steel, brick and terra cotta building, with marble vestibule, at the corner of Bush street and Clara avenue, to cost $170,000; for Mrs. Herman Oelrichs, the reconstruction of the Rialto building on New Montgomery street, which was damaged by the late fire; for T. S. Williams, an eight-story fire-proof building at the corner of Mission and Third streets, to cost $28,000; for the Market Street Company, a two-story factory building on Powell street, near Bay, to cost $15,000; for William Wilson, a four-story office and store building on East street, near Mission; for Charline & Goldstine, a two-story brick building at the corner of Geary and Polk streets, to cost $15,000; for Albert Joseph, a three-story storage buildand office building at the corner of Market and Fourth streets, to cast $15,000; for Albert Joseph, a three-story storage building at the corner of Fremont and Mission streets, and a large number of smaller brick buildings. Besides this the State and Federal governments have appropriated large sums for the reconstruction of State and Federal buildings destroyed or damaged by the fire. The State has appropriated $500,000 for this purpose, and the Federal government has arranged to expend $1,500,000.

Even before the passing of the new building ordinance a number of brick buildings had begun to make their appearance among the scores of temporary wooden and sheet iron buildings which now cover a large portion of the burned district. One building with a handsome enameled brick front is rising conspicuously on Ellis street among the tall ruins of the boarding house district north of Market street.

Pacific Coast Notes.

The brick plants about San Francisco, which were more or less damaged by the earthquake, have now been repaired, and most of them are rushed with work to supply the demand for the reconstruction of the city. Burning is to be resumed at the Remillard Brick Company's plants at San Jose, Peasanton and Green Brae this week. The company reports that labor is still scarce, and that the old difficulty of getting men to run the plants is still to be faced. The company was a loser to a considerable extent by a fire which destroyed its barns and somed other property at San Jose, June 30th. The main plant was, however, saved. Since the big fire the company's head offices have been located in Oakland.

The Pacific Supply and Manufacturing Company, which was recently organized at Los Angeles, Cal., with James Dodson, president and general manager, and A. J. D. Gaffey, secretary, has let a $12,000 contract for the construction of its new brick plant at O'Farrell and Pacific streets.

The Cowan & Hout Company, of San Francisco and Oakland, has secured a six-acre tract with good railroad facilities at Point Richmond, and will put up a $30,000 plant for the manufacture of fancy tiling, fire brick and terra cotta. The company has a valuable deposit of fire clay, which will furnish raw material.

The Port Costa Brick Works, of San Francisco and Port Costa, Cal., is arranging to remove its principal place of business from San Francisco to Port Costa.

Jerry Deneen, of Deneen Bros., one of the largest firms of builders in San Francisco, who will build the Palace Hotel, and F. Hilbert were in Santa Cruz last week, looking over the sand deposits for the purpose of selecting a place for the manufacturers of sand brick. They visited Moore's beach and Twin Lakes, the sand at the latter place being pronounced very good.

The brick machine from the Pioneer Brick Yard east of Visalia, Cal., has been moved to the company's new yard on the Miller ranch east of Visalia.

The Pacific Manufacturing and Supply Association of San Pedro, Cal., is now burning a kiln of over 500,000 green brick, to be used in San Pedro in building some of the buildings about that town now under construction. The company intends to install the new machinery recently purchased before burning any more brick.

The contractors and builders of Santa Monica, Cal., met some time ago and organized themselves into the Master Builders' Association of Santa Monica. H. X. Goeiz was elected president, G. D. Snyder vice-president and R. B. Yaple secretary and treasurer. This movement to organize has been under way for some time, owing to the irresponsible contractors making low bids, taking a job, and either putting up a cheap building, causing the owner to pay more than the contract price to have his building completed or leaving town without paying their debts. The new association has been formed to protect owners, builders, contractors and material men from this class.

A company of Los Angeles capitalists have secured a site at the corner of Seventh and Ximeno streets, Long Beach, and will break ground next week for a large brick plant. The machinery is on the way, and by the middle of August the company expects to be turning out 50,000 bricks per day. The company intends also to manufacture sewer pipe and all kinds of clay products.

The Hyfire brick factory has been established at Vallejo, Cal., with a capital stock of $100,000, and is already doing a large business. Fifteen men per day are employed at the factory, and 10,000 bricks per day are being turned out. The main building of the establishment is 350 feet long and 200 feet wide and 50 feet high. The kiln for burning bricks is 300 feet long. The powerful hydraulic press used in making the bricks cost $28,000, and turns out bricks very rapidly. G. Abrahamson is the president of the company and resides in Vallejo. E. C. Kemble is the secretary of the institution. The company uses chrome, iron, silica, clay and sand in the manufacture of brick, bringing the chrome, iron and silica from Fresno county, by the Southern Pacific Railroad Company, and the clay and sand from Amador county, by rail, by way of South Vallejo.

J. Q. Clark is in Vallejo, looking for a site for the manufacture of pressed brick. It is reported that he will select a place near Vallejo Heights. A shipment of pressed brick machinery has already arrived from the East. SUNSET.

San Francisco, Cal., July 6, 1906.

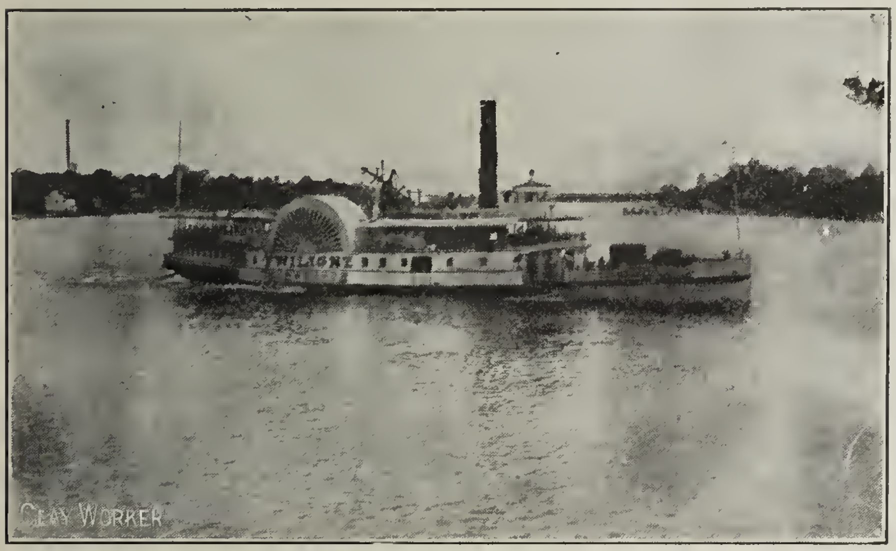
Speaking of insurance, matters, the best way to become independent of the fire insurance qustion is to erect fire-proof structures.

Written for THE CLAY-WORKER.

ON THE DELAWARE RIVER.

RIVER TRIPS for one on vacation or with sufficient time to spare for it are particularly interesting. When one can escape from the rush and roar of a train and sit on deck while the steamer goes up a quiet river, dotted with innumerable villages and towns, the landscape relieved here and there with atractive farm houses, it is certainly well worth the extra time required. And this applies with even greater force when such a picturesque and beautiful spot is chosen as the Delaware. From Philadelphia to Trenton on the steamer Twilight is a trip never to be forgotten. The writer enjoyed it recently, and incidentally learned much of interest in making the trip. For instance, there is scarcely a river in the East where such important developments are being promoted as along the Delaware Immense factories, in one instance an entire town, are being constructed. Some of the finest suburban homes outside of Philadelphia are on the New Jersey bank of the Delaware. At Burlington are enormous iron pipe factories, and so one might enumerate great enterprises which are either in operation or will shortly be in operation.

From the time when the steamer passes under the great drawbridge and the Cramp shipbuilding yards until it reaches Trenton there isn't a foot of the forty miles devoid of interest. If not for some scenic reason, then because of great business developments which are going on.



One of the Philadelphia-Trenton Fleet of River Steamers.

While it would be merely a tiresome catalogue to enumerate all these, it is perhaps sufficient to point out that the great enterprises which are situated along the Delaware are surpassed nowhere in the East, and sanguine business men along the route are positive that the era of development has scarcely begun. The great future which they predict for that promising territory seems almost like a fairy tale. And yet it would be no more wonderful, provided it was realized, than the great business creations which already exist. It is simply a matter of time, that is all.

What the government thinks of the possibilities of the river is shown by the fact that in the forty miles from Philadelphia to Trenton eight big dredges were at work. They were taking up immense quantities of silt from the bottom and depositing it in great barges, and from the river it will be taken out to sea.

The kodak caught some interesting views, chiefly because they are representative of the development mentioned. The few shown here will directly interest brick men, because they are representative of that great industry as it is seen on the Delaware. Numerous plants were seen from the deck of the boat, but they were too far away to enable the names to be read, even if they had signs. But the few here shown indicate something of the importance of the industry in that vicinity.

It will be remembered by the readers of THE CLAY-WORKER that allusion was made in these columns, some time ago, to the immense plant which the Roebling Company is going to establish at Roebling. It extends to the river front and presents a very impressive appearance. When completed it will be a great establishment. Huge docks will be built along the river front, which in themselves will attract the eye of every passer-by.

A great sand bank is shown, which supplies sand for brick making for several firms farther down the river toward Philadelphia, and possibly farther up toward Trenton. The sand is of exceptionally good quality, the sort that is lively and much of it is snowy white in color, glistening in the sun like so much silver dust. Moreover, there are inexhaustible supplies of it, and the bank is so high that it is easy to load to either steamer or barge.

A Sand-Pit on the Delaware.

The other views are representative of life upon the river and disclose graphically the marvels of this highway of commerce, which is increasing in importance every year.

A Canal Boat, Loaded with Brick, on the Delaware.

BURTON.

Report of the Government Fuel Investigations.

The final report covering the investigations during 1904 at the Fuel Testing Plant at St. Louis, Mo., under the U. S. Geological Survey, has been published by the Government and is now ready for distribution. The report will appear in three volumes as Professional Paper No. 48, and will be distributed free of charge. Persons desiring copies of the report should apply for the same to a member of Congress from their district, or to a Senator from their State.

Written for THE CLAY-WORKER.

ALABAMA'S LATEST BRICKMAKING ENTERPRISE.

READERS of THE CLAY-WORKER will be interested in hearing something in regard to the new face brick plant recently erected and put into operation by the Sibley-Menge Press Brick Company, of Birmingham, Alabama, of which Mr. John W. Sibley is president—Mr. Sibley being well known to our readers as the treasurer of the National Association.

THE CLAY-WORKER is permitted to publish herewith some photographs showing bird's-eye-view of the plant, clay bins, and residences of employes. The plant is located at Sibleyville, Alabama, about twenty-five miles north of Birmingham, on the Louisville and Nashville Railroad, which has given to the company the same freight rates on the manufactured product as if they were located in Birmingham proper, thus saving them the freight on raw material. The coal mines of Sibley Brothers (owned and operated by Messrs. John W. Sibley and W. Langley Sibley) are only a mile and a half distant from the brick plant, thus insuring a permanent supply of fuel with only nominal switching charges from the mines to the plant.

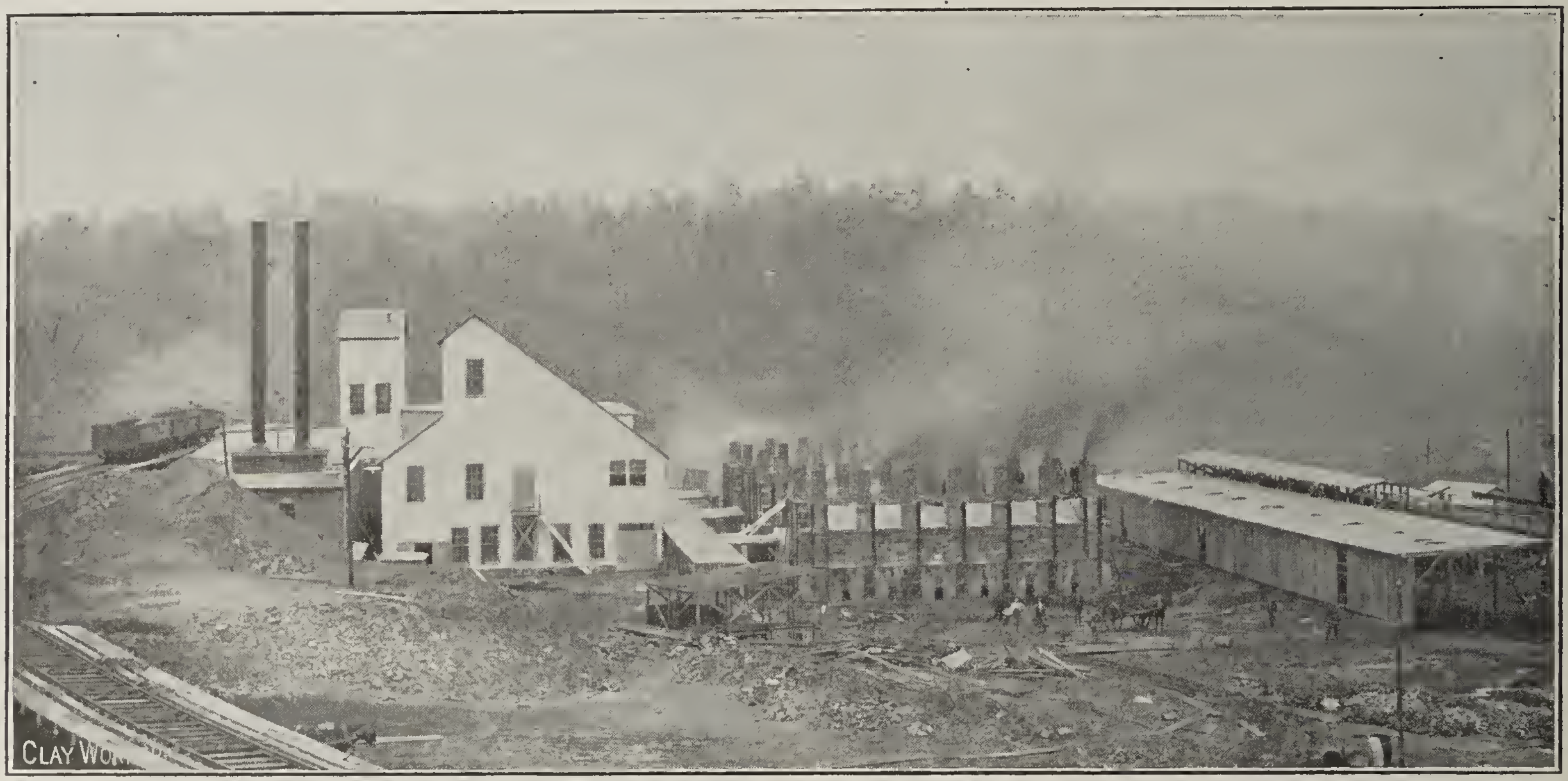
The plant is located in a beautiful valley, with creek running near for water supply, and backed up against an immense hill of shale which is used in the manufacture of dry press brick.

The company manufactures brick in red, buff, mottled and fancy colors; clays for manufacturing the light-colored brick being mined from beneath the coal at Sibley Brothers' mines. The clays and shale are handled by conveyors to a Chambers nine-foot suspended pan, where it is reduced to sufficient size to pass through one-quarter-inch perforation in the dry-pan plates and is then carried up by means of an elevator to a vertical steamer, from which it is distributed in clay bins, of which the company built eight—four for shale and four for light-colored clay—insuring ample storage capacity to permit of the steamed clay going through a sweating process for several weeks before being used in the manufacture of brick.

We show herewith a photograph of the mixing hall between the clay bins, where the various clays are mixed and loaded into revolving dump cars and hoisted by means of cable into the factory proper, where the cars are emptied into the clay granulator, which again mixes and feeds automatically and in regular quantities into a second dry pan, where the clay is ground fine enough for making brick. After being ground, the clay is again elevated and passed over screens and into the hopper above the dry press, from which the bricks are handled on spring trucks to the Eudaly kilns for burning. It will be noted from the illustration that the truckways are covered so as to be protected against the weather at all times, and the floors of the truckways are paved with concrete, insuring smoothness. The burning of the brick requires about twelve days, and after being carefully cooled and annealed they are assorted according to color and shade and quality in the large warehouse, or storage shed, which was only partially completed when the photograph shown herewith was taken. The railroad track for shipping is depressed so that the floors of the car doors are on a level with the floor of the warehouse, making it most economical for handling the brick from the warehouse to the cars.

The main factory is sheathed with galvanized iron, the other buildings being of brick and all roofs of gravel, making this plant comparatively fireproof, but the company has installed a complete fire-fighting apparatus with storage tank on the hill so that two or three streams of water from standard size hose can be thrown entirely over the highest point of the factory, thus giving them the minimum rate of insurance, as well as peace of mind. The company has a splendid power plant, built by the Hardie-Tynes Corliss Engine people, at Birmingham, having a separate engine to operate the grinding and storage department, which can be operated at night—as the plant is lighted by electricity—or any other time, even when the factory should not be in operation. The Boyd Special press is used by the company and the results have been fully up to their expectations, and the product turned out has been highly praised by architects throughout the south. The company's first order was buff brick for a fifteen story office building now being erected in Birmingham, and the brick have been admired by all who have seen them.

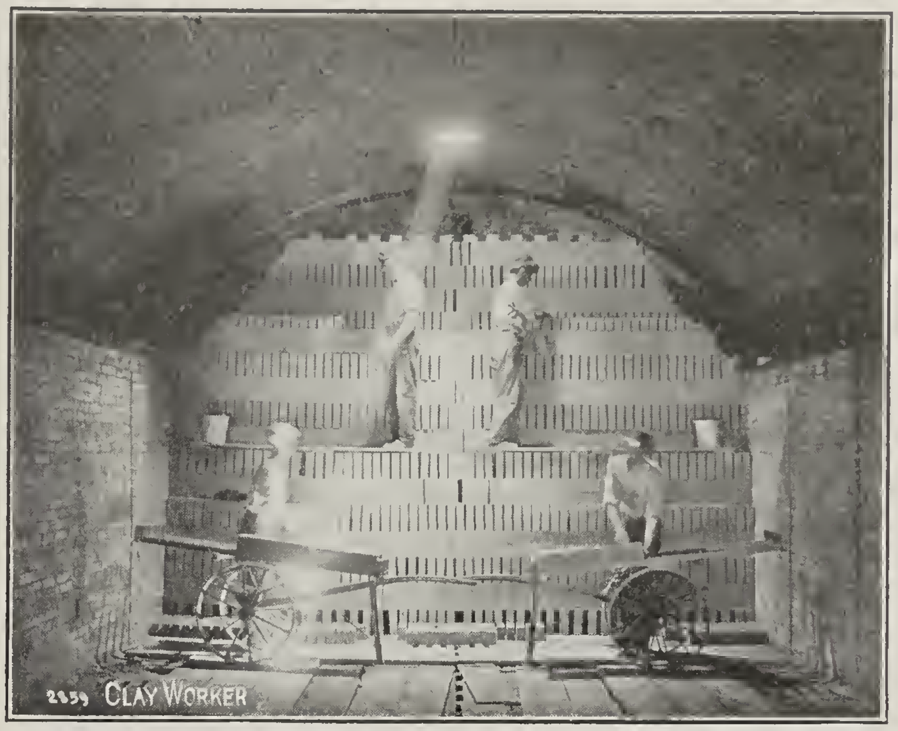
At present they are operating only one press, but the factory buildings and power plant were all installed with the view of adding two additional presses, which they expect to



General View of the Sibley-Menge Brick Company's Plant, Sibleyville, Ala.

Scenes in and About the Sibley-Menge Press Brick Plant.

Water Supply of the Sibley-Menge Plant.



Setting Green Brick in Kiln.

Mixing Hall Between Clay Bins.

Workman's Cottage Near Sibley-Menge Plant.

Factory Office and Commissary.

Bins for Storing Clay in the Foreground.

do this summer and fall, and will give them a capacity of 60,000 brick per day.

The officers of the company are Mr. John W. Sibley, president, who, as above stated, is well known to our readers as treasurer of the National Association; the secretary and superintendent of the company is Mr. W. L. Sibley, who, with his brother, has been engaged for fifteen years in the manufacture of paving brick and other clay wares in the Birmingham district; vice-president and treasurer is Mr. Joseph A. Menge, formerly of New Orleans, who was one of the organizers of the Southern Sewer Pipe Company, operating a large pipe plant at North Birmingham. The company was very fortunate in securing the services of Mr. J. J. Koch as chief burner and the results obtained by him from the Eudaly kilns have been highly pleasing to the company and gratifying to himself. It is said to be the only plant in the south devoted exclusively to the manufacture of face brick, and being located in the Birmingham district is a splendid distributing center for the building trade in the south. The company has spared no pains and expense in constructing an up-to-date plant, the plans for which were designed by Mr. W. D. Richardson, the well-known brickworks' engineer, of Columbus, Ohio, and we bespeak for them the success which their efforts and capital deserve.

Top of Storage Bins for Clay.

Screen Room, Sibley-Menge's Plant.

For the convenience and comfort of its employes the company has erected nice and cozy dwelling houses and also operates a commissary, which is a great convenience to the employes while incidentally being of some profit to the company.

Written for THE CLAY-WORKER.

HANDLING MEN.

The FLOOR OF Convention Hall is not the only place where the members of the N. B. M. A. buttonhole each other. But all through the year, whenever and wherever two of the members of that organization meet, there is a pleasant smile and a hearty handshake, which is only the outward and visible sign of the good feeling that exists towards each other. I had a reminder of this the other day when our friend Jones and Smith met.

It is not necessary for me to tell you which Jones and Smith I refer to, suffice it be to say that they belong to that great family that is scattered all over this great country, from the Atlantic to the Pacific, and from the Gulf to the Hudson Bay; for the Canadian border is no barrier to the fraternal good feeling which exists in the bosom of the clay-worker for his fellow craftsman. "How are you, Mr. Smith," says Mr. Jones, "How glad I am to see you. I have been wanting for a long time to do so. I know that you have a national reputation for being able to handle men, and I know this is true, for you have several men that have worked for you many years. When a man can keep men like that, there is some chance of developing some clever men who can get used to the clay and kilns, how best to set the brick; how fast or how slow to watersmoke; how to fire the kilns so to get the best results, etc. Then they get used to handling the machinery and sorting and shading, and they get used to your way of doing business. It is a great advantage, one that cannot be over estimated, but I cannot get men to stay long enough to get acquainted with me. How is it, Mr. Smith, what is the secret of your success in this line?"

Shale Bank, Sibley-Menge's Plant.

"Search me," said Mr. Smith. "I don't know what it is that makes the boys hang round me as well as they do, for it is not that I do not put them through with their work, for as you know, we make as many brick per man as any yard round. Of course I always let the boys feel that we are all one, with one object in view, to make a given amount of good brick per day, and we all feel from the office force to the water boy that each is responsible for his part."

"That is the point I want to get at, Mr. Smith. How do you inspire them with that spirit?" said Mr. Jones. "I keep on the full run from morning to night, and you might know which way I had gone, as the air is blue in my wake." Mr. Smith smiled and said, "It not only takes all the muscle we have but all the brains, too. I try to be so frank and familiar and so easy of approach that no one hesitates to suggest any idea which in working may have occurred to him. When any one approaches me with what he believes an important suggestion, I listen very attentively and give it due consideration. If it is a good one we adopt it at once. If a good one, but impossible to use, I tell him so; if impractical, I kindly point it out to him. By doing this, the men get interested as they see their plans put in execution and thus we get many a valuable idea which we would otherwise not get.

"Yes," said Mr. Jones, "of course I have a few confidents to whom I sometimes give a little taffy, with the object of getting more out of them. They come in handy to tell me if any is loafing on me, but there is not much in it; I would not trust them out of my sight."

Mr. Smith gave another little smile. If there had been anyone to interpret what his smiles meant, it no doubt would make interesting reading, but as there was not, we can only guess. "We have no favorites," said he. "I do not encourage my men to tattle on one another. I think it belittles both me and them. I try to display towards each a strong manly bearing, not hesitating to give praise or rebuke whenever needed.

Sorting Brick in Stock Sheds.

"It would not do for me to praise my men," said Mr. Jones, "they would lose their head or jump me for more money."

"Of course we cannot put all men on the same level," said Mr. Smith. "When it comes to doing work and the different way they go at it, there is as much difference in the value of men as there is between a blood horse and a jackass. We never fail to see and acknowledge any good trait that is prominently displayed in any one of them; we do not always stop for a man to ask us for more money, but when we find that we have got hold of a very valuable man, we pay him what he is worth to us, thus securing his services, as we can depend on it that any man of this kind will stay until he can better himself, and if we are giving him a trifle more than he can get elsewhere, we know that he is our man."

"This is the most important subject we clayworkers have to deal with, at least I feel it so, in this part of the country where men are scarce and times are good," said Mr. Jones.

Mr. Smith replied that fortunately he was surrounded with a lot of good men; most of them owning their own homes near the yard, and was as much interested in the prosperity of the yard as he was—knowing that the price of their property, as well as their jobs depended on it.

"Lack of confidence seems the greatest draw-back among my men," said Mr. Jones. "Many of them will rent cottages with good gardens near the yard, but will not plant them for fear they might not stay long enough to reap their crops."

"Our men," said Mr. Smith, "feel that their job is as permanent as the yard. They make themselves indispensible, and they have too much confidence in the management to fear of being dismissed without cause, or for the sake of having a change. When there is a place vacant that is easier or more pay in it, the next man who has claim to it gets it if qualified; if he is not, it goes to the one that is. I am careful to place men at the work for which they are the best adapted. The value of some men cannot be over estimated at the pick and shovel, yet the labor of the same man might be a dead loss at a job that requires skill. It is useless to set a man naturally slow in his movements at a job that requires speed, although he might be just the man for some other place. If I have a great talker, I give him a job to himself, for if in a large gang, he would keep them all listening to him. Some of the men who are bold and domineering I have to chop off short. Others, who are timid or without confidence in themselves, I encourage by kind words; the idle man I give a job where there is so much to do; if he does it good, all right; if not, he gets his honorable discharge. If I have a man that does not suit me, but on account of the scarcity of men I want to keep awhile, I make it a point to see him alone and tell him my grievance. This will cure some; others it will not, the only remedy is to say a long good bye."

Boyd Press in Action, Sibley-Menge Plant.

"All coons look alike to me," said Mr. Jones, "but the thing that troubles me most, is, that the men will stay away without asking permission. Of course I fire them on sight as soon as they return, but that don't help me any."

"Except in case of sudden sickness during the night, my men usually ask the night before for a day off," said Mr. Smith. "If possible, I accommodate them, and this encourages them to come to me again. I have found from experience that where there is as many men as I have, that I have to keep two or three more than I really need in order to fill the places of those absent either from sickness themselves or in the family, or other causes. Sometimes they are all there together, but that gives me a chance to do some job that I had reserved for just such a day. If I have to lay any off, it is my worst men. I never ask an unreasonable thing of my men, nor make an apology."

"The worst thing to contend with is breakdowns," said Jones. "It is not the cost of the piece of machinery that is broke that cuts so much ice—though that is bad enough—but there is the delay, with all its ill attendants: first, you may not be able to fill your contract; that loses the good will of the contractor and his esteem for all time; then you may lay off the men, and do as you will, the fixed expenses go on just the same, with no income coming in. When finally you are ready to start up again, your men, while laid off, have got jobs, and you have to start up again with green men."

Mr. Smith said he had a very reliable man who understands machinery, whose only business is to keep going around among the machinery to see that no nut or screw is working loose, and see that all journals are oiled and running cool, and that no belts are pulling apart.

"We have a man for that, too," said Mr. Jones, "but I keep him busy at work; there is no idle men on my yard." "As I was going to say," said Smith, "we know all the weak points of our machinery and keep on hand a duplicate of each piece."

"We have enough to do to meet our bills without buying things before we need them," said Jones.

"We think that the very success of the yard depends on this," said Smith. "I have a list of all the bolts in all the machinery from the most delicate piece down to the\wheelbarrow, the length, thickness, whether machine or wooden bolts; then we have a stock of these on hand, each lot in a pigeon hole to themselves. When anything breaks, all we have to do is to take it out and put in the new one—a job which usually does not take very long."

Just then Jones' car came along, and turning towards it, he waved a farewell. "So long, until we meet again." Mr. Smith proceeded with a leisurely step toward his yard, and an air of confidence which comes from the knowledge that everything, even in his absence, was all right.

T. Wells.

Preparation of a German Stoneware Body.—It has been often pointed out that the Germans are producing a better stoneware, so far as the body qualities are concerned, than we are. Their stoneware is, as a rule, nearly, and often completely, vitrified, and such bodies are much used in the manufacturing of chemical stoneware. To obtain an idea as to the nature of such bodies we find an interesting article of A. Hisgen. His experiments are conducted on a clay from Hillscheid, near Coblenz. This clay vitrifies at cone 9, but has the defect that much of the ware made from it would crack badly. In order to overcome these defects and in order to obtain a body which would vitrify at a somewhat lower heat, he added first kaolin. Vitrification did not set in low enough, and the addition of feldspar was made next. Results were better. In order to bind the body still more, flint was used, and his final result was a body of 70 parts of the original stoneware clay, 30 parts of kaolin, 6 parts of feldspar and 12 parts of flint. The rational composition of this mixture was clay substance, 50.82 per cent.; feldspar, 10.46 per cent.; flint, 38.72 per cent. For very large stoneware pieces, 20 parts of the stoneware clay were substituted for 20 parts of fine ground calcined grog from the same stoneware clay.—Keram. Rundschau, No. 49, 1905.

Sewer Pipe Kiln Temperatures.—The temperature at which sewer pipe kilns are finished in Germany ranges at about 1500 degrees Centigrade, or about 2700 Fahrenheit. In Scandinavia the finishing heat ranged, according to close observation, between 1260 and 1440 Centigrades (2300-2624 degrees Fahrenheit).—Tonind. Z. No. 49, 1906.

* * *

Ceramic Industry in Japan.—According to statistics recently issued by the Department of Commerce of Japan, the ceramic industries of that country increased from 1893 to 1903, from 4,732 to 4,964 factories, and the employes increased from 22,726 to 23,599. The output of all ceramic establishments increased from 3,204 million yens to 6,976 million yens.

* * *

German Sewer Pipe Standards.—The following standards have been adopted by the Prussian government for sewer pipe to be used on all public buildings: Four, five, six and eight-inch sewer pipes shall have a length of 24 or 40 inches. The thickness of the pipe shall average ⅝-inch. The socket shall be from 2 to 3 inches deep. The end shall have 5 rings. Data is also given for elbows, curves, traps and other fittings.—Deut. Tofp. & Z. Z. No. 100, 1905.

* * *

Clay Industry Calendar 1906.—Tonindustrie Zeitung of Berlin has issued again their regular calendar for the ensuing year. It consists of three volumes. The first one is a pocket memorandum book. The second volume contains a description of all apparatus which are used for testing, controlling heat, draft gauges and other supplies. The third volume contains the names of all leading clayworking firms. We are indebted to our German contemporary for a copy of this most valuable calendar.—The Editor F. S.

* * *

Transactions English Ceramic Society, 1904-1905.—We are indebted to the Secretary of the English Ceramic Society for a copy of the transactions of that body. The volume contains some very valuable information. The membership of the society is 91 at present. Its financial condition is excellent. Among the different papers we find, "the fluxing effect of bone in English China; China and earthenware glazes; emanations from clays during firing; notes on the fineness of particles of glazes," and other subjects. We will reproduce some of these papers at some future date.—The Editor F. S.

* * *

Disintegration of Roofing Tiles.—The cause of the disintegration of roofing tiles is a question which is brought up quite often by our German friends. The use of such tiles is much more extensive than in this country, and consequently the problem is of more interest. Mr. J. Mandel describes his reasons for the cause, by stating that the main cause starts in the spring by thawing weather, and starts on the surface of the tiles. The reason for this disintegration can be traced to different causes: First, it can be in the method of the clays handled in grinding and mixing. For roofing tile the clay body should be well ground and pugged; otherwise the unevenness of the clay body is liable to cause uneven density in the tile. Another cause is soft burning. The way the tiles are laid on the roof can also start the trouble. If the same are laid in cement mortar, and no provision is made for expansion, the tiles will scale off on the jointed edges.

The best tiles are those of a partly vitrified nature, and also glazed tiles, which do not permit the water to be absorbed by the body.—Tonind. Z. No. 43, 1906.

* * *

Clay for Acid Proof Bricks.—It is impossible to determine from the chemical composition of a clay, if it can be used for such purposes. The best clays for acid proof bricks are usually such clays which vitrify at reasonably low temperature, and do not have a too low percentage of alkalies and alkaline earths. Clays for such purposes which should need a salt glaze to give them a vitrified surface should not be used for acid proof bricks.—Tonind. Z. No. 151, 1905.

* * *

Kiln Flue Dampers.—In reply to a question as to the best fire clay damper for kiln flues we find several answers. In Fig. 1 is shown a damper which has given very good results. It is inexpensive in keeping it in repair, and the first cost is not very high. The fire clay slabs are about 12 inches high, with a thickness of 2 inches. The iron bolt which holds the slabs together is countersunk in the tile, and is fully protected from the heat. This kind of damper was used in kilns in which the heat did run as high as cone 17.

The damper shown in Fig. 2 is of a more complicated nature. It will answer the purpose very well. Should at any time the fire tile break, it is easy to replace the same with a new tile, and the weight of the damper is not too much to be suspended by a small chain.—Tonind. Z. No. 49, 1906.

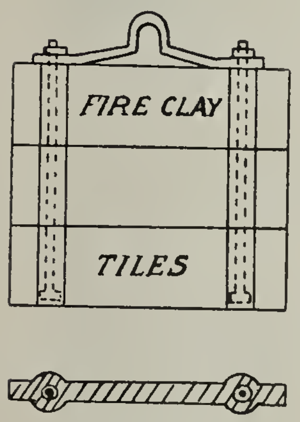


FIG NO I

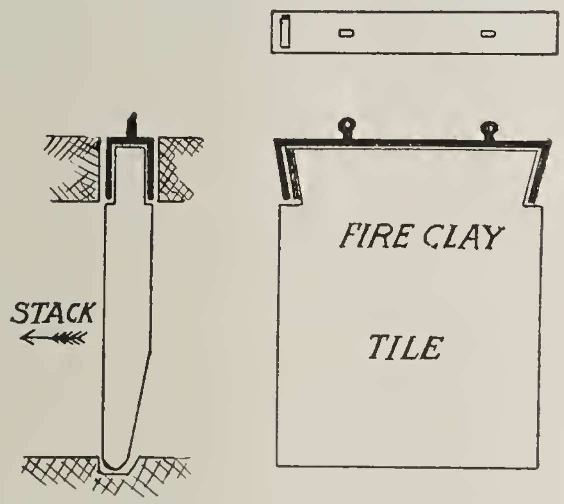


FIG. NO. 2.

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What Brickmakers Can Expect of the Sand-Lime Brick Industry.—In a recent meeting of the brick manufacturers of Berlin, Dr. Fiebelkorn read an interesting paper in connection with the sand-lime brick industry around Berlin. After a close description of the manufacturing of such bricks, he came to the point of the testing of the materials, and the attention of the brickmakers was called to the fact that there is at present more data in regard to the strength of sand-lime brick than of clay bricks. It has been found that the average clay brick is equal in regard to such tests to the sand-lime brick. The average absorption of sand-lime bricks of 22 tests was 14 per cent., the lowest was 9 per cent., and the highest 18.4 per cent. From 1 to 2 per cent. of moisture is also noticeable in such bricks. Most bricks stand more than 140 kilos per square centimeters, which is the lowest test allowed by the National Association of Sand-Lime Brick Manufacturers.

In order to meet the competition of sand-lime bricks, the clay brick manufacturers should aim to get better products, to make more uniform bricks, to economize and reduce the cost of production; then sand-lime brick sell just a little lower than clay bricks. Attention was also called to the fact that clay brick manufacturers should pay more attention to the weathering qualities of their bricks.

In a lengthy discussion, it was pointed out that quite a large number of contractors who had been using, for some time, sand-lime bricks for their building contracts, had gone back to clay bricks, and a resolution was passed to find out for what reasons these contractors disregarded sand lime bricks, and what faults they found with them.—Tonind. Z. No. 147, 1905.

Sand-Lime Brick Industry in Germany in 1905.—The sand-lime brick industry of Germany is represented at the end of 1905 by 190 factories, which is an increase of 50 establishments for the year. The total production can be estimated between 800 and 1,000 million bricks. In Berlin there are 30 factories, with a total production of 330 million sand lime bricks. The price paid for such bricks was between 27 and 28 marks ($6.48-$6.72). Of this amount about 62 million brick were used in Berlin, in comparison with 1,500 to 1,800 million clay bricks. Sand-lime bricks seem to have obtained a good hold in the Berlin market, but reports from other parts of Germany indicates that there is yet a great many contractors and builders which do not have great faith in this new building material.—Tonind. Z. No. 152, 1905.

* * *

Prize Contest for Pressed Brick Buildings.—The German Association of Pressed Brick and Terra Cotta Manufacturers have decided, at their last annual meeting, to make a prize contest for the best design in color for the use of pressed brick in buildings. The idea was brought out in a debate about the question of the colors of different bricks, and the increased demand of the architects for new shades of bricks. It was the general opinion among the members of the association that they are too much at the mercy of the fancy of the architects in designing buildings in which the color scheme was not very good. In order to prove to them that the shades of brick, as at present manufactured, were sufficient for any color scheme this prize contest would be started, and all German architects would be invited to submit their designs. First prize will be 600 marks.—Deut. Topf. & Z. Z. No. 29, 1906.

* * *

Keramit Bricks for Paving Material.—Under the name of "Keramit brick" there has been introduced in different parts of Europe a paving brick which is quite different from the ordinary kind, not only in color but also in composition. This brick has its origin in Buda Pest, and it is extensively manufactured in Ungarn and Austria, and has been recently introduced in several places in Germany. The color of Keramit bricks is a greenish yellow, which runs to buff. They are extremely tough and nearly vitrified. They stand the wear and tear of the streets in good style, and show better qualities than the pavers made of fire clay or shale.

According to an analysis of the chemical laboratory of the Deutschen Topfer & Ziegler Zeitung, these bricks have the following composition:

Silica	54.11 per cent.
Alumina	18.63 per cent.
Oxide of iron	5.55 per cent.
Lime	16 38 per cent.
Magnesium	4.52 per cent.
Alkalies	0.81 per cent.
	100.00 per cent.

The clays for these bricks are mixed from different kinds, and should be compounded according to chemical analysis and formulas. The bricks are made by hydraulic presses. The burning process has to be very carefully watched, as they are liable to overburn the bricks on account of the high percentage of lime. (The heat at which they burn is not stated in the article.—Translator).—Deut. Topf. & Z. Z. No. 37, 1906.

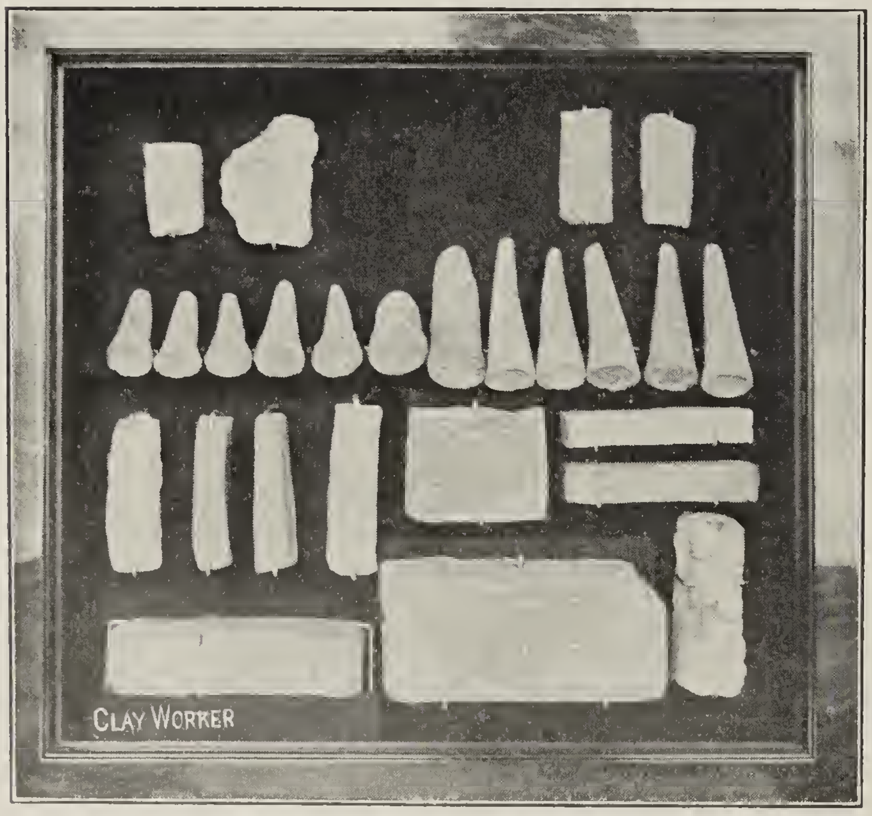
Written for The Clay-Worker.

AN INTERESTING COLLECTION OF ANCIENT BRICK.

ONE OF THE most unique collections of brick ever attempted is that of a series of ancient and historic bricks in the possession of William H. Hunt, of Cleveland, Ohio. Mr. Hunt is ex-President of the National Brick Manufacturers' Association of America, ex-President of the Cleveland Builders' Exchange, and affiliated with many other bodies, as well as being general manager of the Cleveland Hydraulic Pressed Brick Company. For years Mr. Hunt has bent his energies towards making as complete a collection of bricks as it is possible to get together, and that he has succeeded admirably seems evident. The collection is at present on view in the Builders' Exchange, Cleveland.

One of Mr. Hunt's ideas during the past few years has been the raising of the brick business from the level it assumed a decade or two ago to its present status, where it is recognized as one of the most important branches of the builder's art. To Mr. Hunt much of the credit for the raising of this standard is due.

This collector of old bricks has traveled around the world several times, and while rambling through the old lands has devoted much time and expense to the securing of historic specimens of bricks, duplicates of which can now only be found in the great museums of Europe. The pictures of some of these odd specimens speak for themselves and indicate their historic importance.

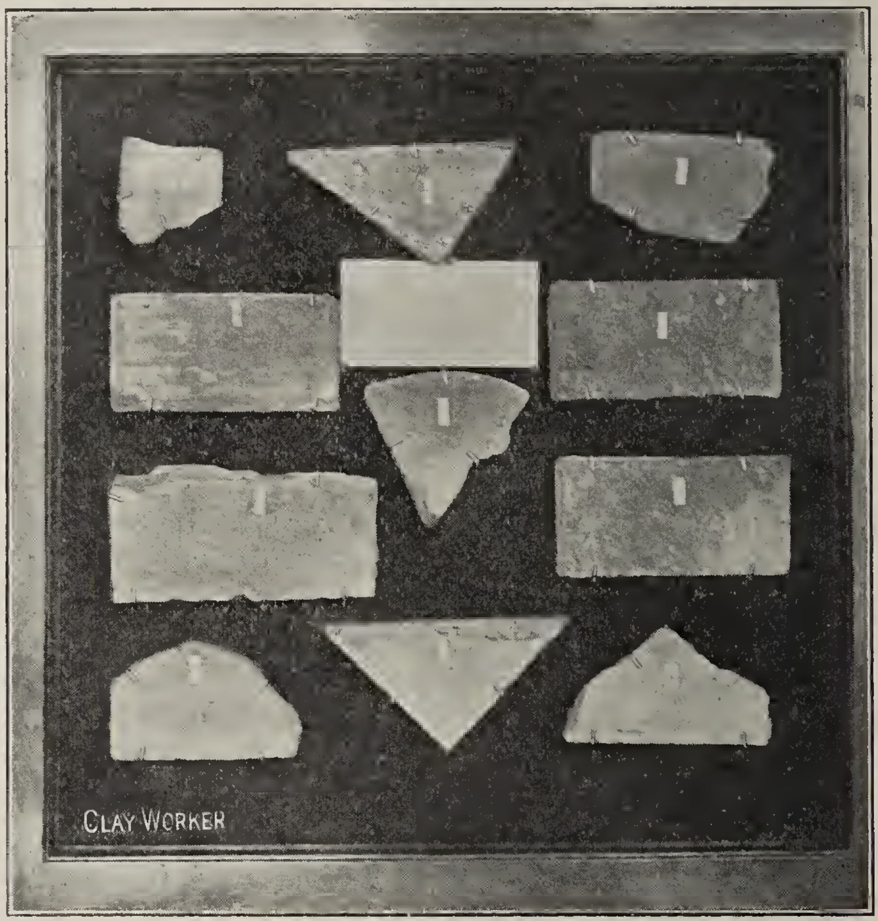


Ancient Egyptian Brick and Cuneiform Cones.

One of the cases of Mr. Hunt's collection is devoted entirely to a display of Pompeiian bricks, which are still in perfect condition, though they have weathered the storms and earthquakes of 2,000 years. Another case is devoted to bricks collected in India, Egypt, China, and other eastern lands.

Specimens of bricks made in the early days in America are not the least valuable among this collection. The first glazed brick made in America and used in the Bruton church, at Williamsburg, Va., is here to be found. It was presented to Mr. Hunt by the rector of the church and is duly authenticated. Two sun-dried bricks came from the original settlement of Buckroe, on the western shore of Chesapeake Bay, about two miles north of Old Point Comfort, Va. Two bricks come from the old Jamestown church and were used in the foundation of the structure, which was erected in 1608.

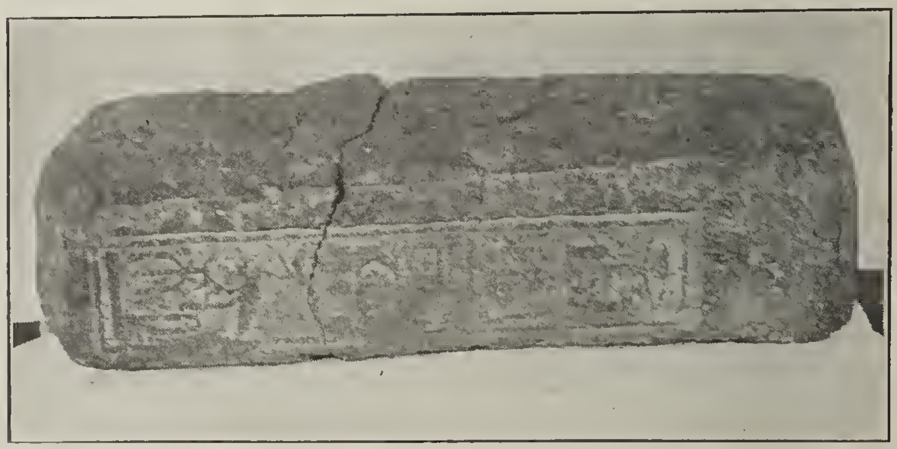
Mr. Hunt is of the opinion, after much study and research, that the first brick kiln in America was located at Jamestown, Va., during the years 1607-8. The first brick used was in the building of the Protestant church. It is one of these brick which Mr. Hunt now possesses. He regrets, however, that he does not know the name of America's first brickmaker.



Case of Interesting Brick from the Temples of Pompeii.

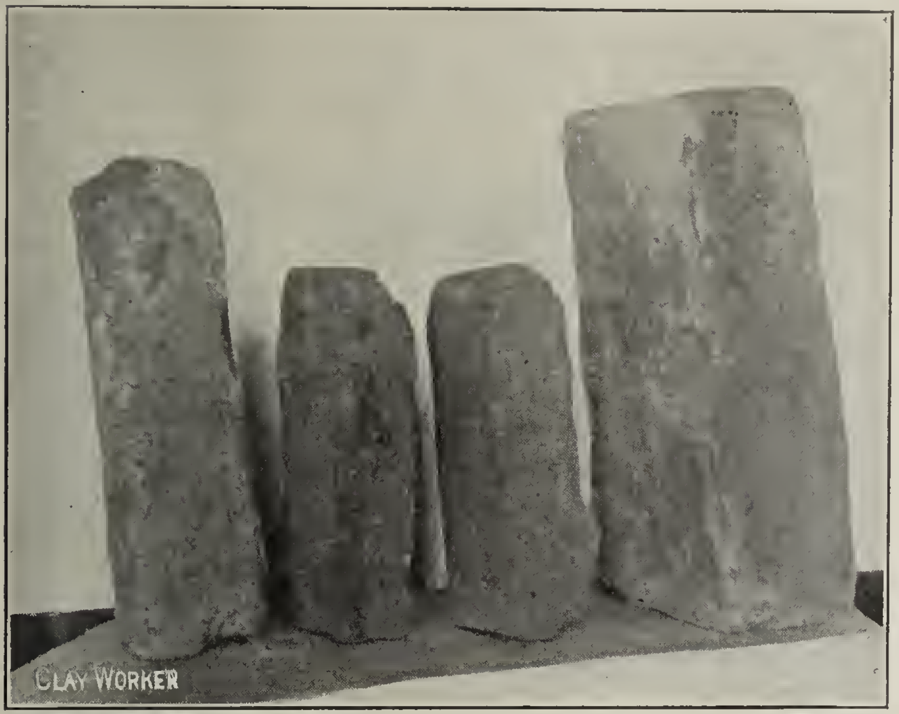
Mr. Hunt has made a careful study of the conditions surrounding the brick business in America and his conclusions are valuable, inasmuch as they are entirely authoritative.

"Not more than twenty years ago," he says, "a pressed brick or a brick for facing the exterior walls of a building was universally understood to be a brick of red color, of a clay finely ground, insuring close face texture when carefully molded, or pressed, and with edges true and parallel.

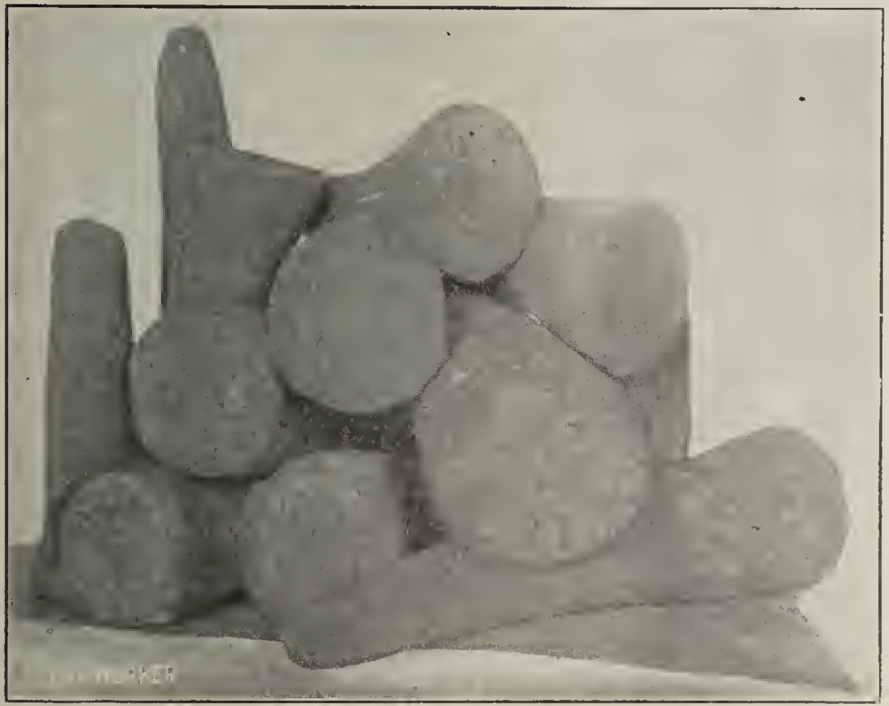


Brick from Luxor, Egypt.—This brick Mr. Hunt obtained from a native in Egypt. A duplicate may be seen in the Cairo museum. The marks indicate the name of Isimkhabiou, wife of one of the high priests of Amon, in the time of the twenty-first dynasty—about 1100 B. C.

"In due time the artistic or aesthetic mind protested against this universal color scheme, and to introduce variety light burning fire clays came into use. First came the buff or cream colors, and finally the genius of the brickmaker was exercised to satisfy the ever changing fancy of the architect and the owner for 'something new,' so that it has become possible, by the mixing and manipulation of clays, to produce in burned clay bricks almost every known color, and in a variety of shades.



Ancient American Bricks.—The two large bricks shown here were taken from the foundation wall of the church at Jamestown, the first Protestant place of worship erected in America. They are believed to be the first kiln-burned brick manufactured of American clay. Two small sun-dried bricks shown in the middle are from the foundation of an ancient structure at Buckroe, Va. The original settlement of Buckroe is placed at 1623, consequently making these bricks in the ancient class.



Funeral Cones.—Red terra cotta funeral cones from Thebes. These are believed to represent offerings in the shape of conical loaves. They are stamped on the end with the name of the deceased, so they might reach him in the next world.

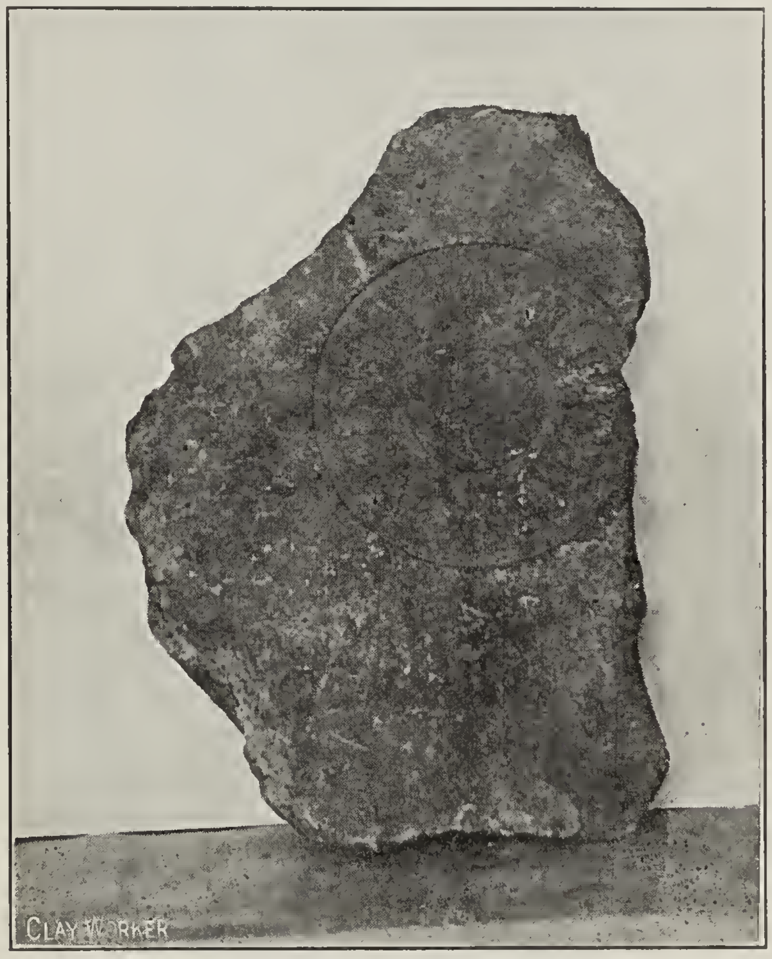
"The demand for 'something new' brought forth facing bricks of different size or proportions; the 'Roman' brick, long and narrow; the 'Norman' brick, of Roman length and standard thickness. The common 'American' standard of size is slightly larger than the 'Dutch' and smaller than the 'English.' These are the proportions which characterize the bricks used in the earliest colonial buildings and which continue to be more or less popularized because of their early employment.

"In the beginning of this demand for 'something new' an enterprising brickmaker in western Pennsylvania introduced a product which he termed a 'Pompeiian' brick, declared to be a reproduction of bricks formerly used in that ancient city.

"My careful investigation of the ruins of Pompeii have failed to discover bricks of like character, in point of color or texture, being similar only in respect to proportion.

"I did not observe in any instance the use of bricks either at Pompeii or at Rome with a view to exposure of the bricks in the finished wall; there appeared to be universally the practice of covering the wall with stucco or cement coating, which often was painted in brilliant colors.

"The term 'Roman' as used by the American clayworker designates the size of the brick rather than the texture or color, not necessarily a fixed size, but a brick long and narrow. The Egyptian bricks of the Roman period are larger in size, both in length and thickness, than any of the ancient birck work used in Italy.



Ancient Roman Brick.—This brick was secured from an antiquarian at Rome. The brick is inscribed with the name of its maker, "Hermetis Cap Favors" (from the brick kilns of Caius Calpetanus Favor. It dates from the beginning of the second century.

"The so-called Flavian palace on Palatine hill, in Rome, was constructed of triangular shaped bricks, so placed in position as to create a flush wall both inside and out, the core of the wall filled with rubble or concrete. The brick work was concealed by a coating of plaster.

"Brickmaking has been one of the world's foremost industries since prehistoric time. During the Roman supremacy chosen families were conceded exclusive privileges for the manufacture of bricks entering into the construction of stately buildings.

"The dignity and importance of the clayworker of that early period has been regained in recent years by the genius of American enterprise. In no other country has the art of clayworking reached such huge proportions or developed to the same degree, the art of mixing and burning clay with a view to satisfying every mechanical requirement and the most exacting critic of the artistic expression of the product with respect to color and texture. It has become possible to produce in burned clay bricks practically every known color in a great variety of shades.

"In trade importance, the brickmaker, particularly of high grade product, ranks with the foremost production experts of the world's industry. But one other American manufacturing industry, that of iron and steel, is greater in volume and importance."

WERE COLONIAL BRICKS IMPORTED FROM ENGLAND?

In The Century, for December, 1894, John Williamson Palmer, in his article, "Old Maryland Homes and Ways," says that "here (in Maryland) stood the sturdy domicile, broad and square, built of bricks brought over from England in the ships that came for tobacco." Now Maryland was settled in great measure by Virginians, and Mr. Palmer repeats only what is current as an accepted tradition in Virginia.

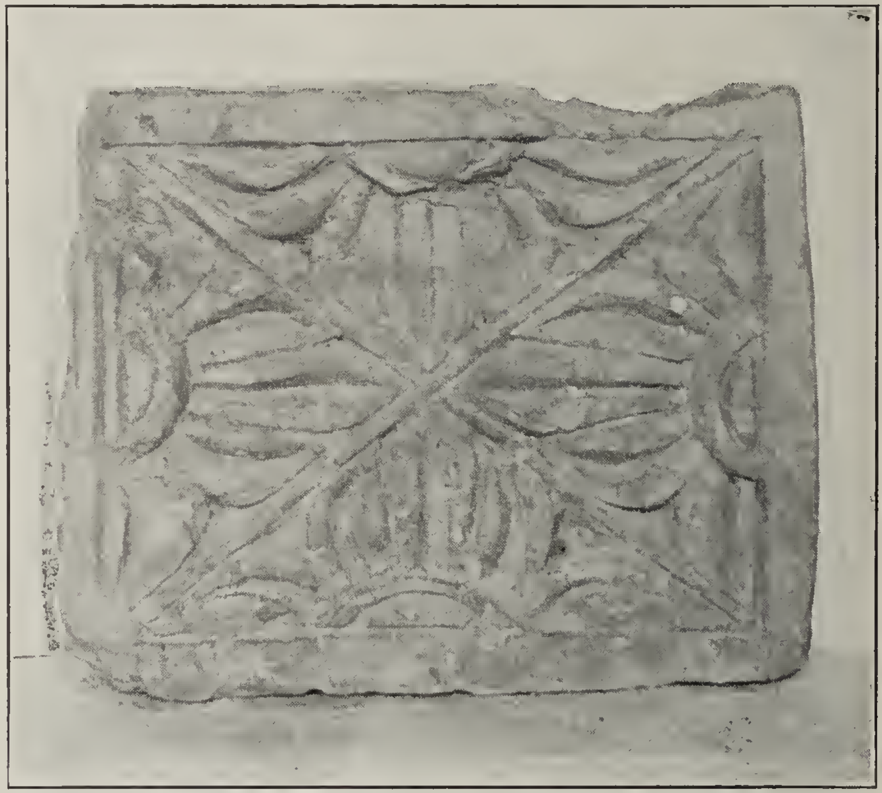
First Glazed Brick.—This is supposed to be the first glazed brick made in America. It was taken from the original east wall of the chancel of the Bruton church at Williamsburg, Va., the oldest church in America in matter of continuous use. Among the early Virginian colonists were some Italian beadmakers, brought to this country to make beads for the Indians. It is believed they tried their skill in making this first glazed brick.

But traditions are not history, and if Mr. Palmer has any facts from the Maryland records to support the tradition, I, for one, would like to know what they are. On the contrary, the facts from the Virginia records are all the other way. In spite of the tradition, there is not a case to be found in the annals of Virginia of brick imported from England.

Indeed, the objection to the tradition is at the threshold. It stands to reason that it was easier to import brickmakers than brick. Moreover, the importation of settlers was a paying business, since for every immigrant there were allowed fifty acres of land to the importer. Many ships went to England yearly with tobacco from Maryland and Virginia, but they came back freighted, not with brick, but with immigrants, servants and dry goods. There is no lack of bills of lading giving evidence of such cargoes. Sober thought seems to repudiate the idea of importing across 3,000 miles of water, in the little vessels of that day, a commodity like brick, which in damp weather would absorb vast quantities of water, endanger the vessel, and bring no adequate return.

We know that there is no lack of good brick clay in Virginia and Maryland; and the truth is that if there was anything, after the making of tobacco, in which the planters were well versed, it was in the making of brick. But I must quote the records.

Brick from Luxor Temple.—Secured by Mr. Hunt from a native using a part of the Temple of Luxor as a living place. Hieroglyphics being splendidly preserved make it very valuable. Is 3,000 years old.



Brick from India.—This brick is from the excavations near the great Buddhist "Tope" at Sarnath, North India, which was built to commemorate a spot sacred to Buddha. Carved with skill and is believed to be part of ornamental frieze of brick structure built by Emperor Asoka during his reign, about 200 B. C.

Now it seems that brick was made use of almost contemporaneously with the first settlement. To quote the Rev. Alexander Whitaker, who wrote, in 1612, of Virginia: "The higher ground is much like the moulds of France, clay and sand being proportionately mixed together at the top; but if we dig any depth (as we have done for our bricks) we find it to be red clay, full of glistening spangles." (Brown's "Genesis of the United States," Vol. II, p. 584.) Again, in the "New Life of Virginia," published by authority of the Council of Virginia, at London, in 1612, there is this statement: "You shall know that our Colonie consisteth of seven hundred men at least, of sundrie arts and professions. . . . The Colonie is removed up the river four score miles further beyond Jamestown, to a place of higher ground, strong and defencible. . . . Being thus invited, here they pitch; the spade men fell to digging, the brick men burnt their bricks. the Company cut down wood, the carpenters fell to squaring out, the sawyers to sawing, the souldiers to fortifying, and every man to somewhat."

The first brick houses in America, made by Englishmen, were built at Jamestown, and in August, 1637, Alexander Stoner, who calls himself "brickmaker," took out a patent for an acre of land in Jamestown Island, "near the brick-kiln." That the soil on the island was prime for making brick is shown by the letter of the council in 1667, who, when the king required the fort at Old Point to be repaired, argued in favor of that at Jamestown, "which hath great comodity of Brick Turfe or mudd to fortifye withall" (Sainsbury Mss). The fort at Jamestown, like all the rest, was to be home work, since in 1673 there is a complaint on record that the contractors, Mr. William Drummond and Major Theophilus Hone, had "made the brick," but had not erected the fort (General Court Mss.) And in the York County records there is a suit in 1679 "about a house for the safeguard of the bricks made upon Col. Baldry's land for building Fort James at Tyndall's Point" (now Gloucester Point).

In 1649 there was printed a little tract, entitled "The Description of Virginia" (published in Force's "Tracts"), wherein it is stated that "the people in Virginia have lime in abundance made for their houses, store of Brick made, and House and Chimnies built of Brick, and some wood high and fair, covered with Shingell for Tyles; yet they have none that make them (tiles), wanting workmen; in that trade the Brickmakers have not the art to do it, it shrinketh." Cypress shingles are still preferred in Virginia to clay tile for roofs of dwellings. In the act of 1662, providing for brick houses in Jamestown, not only are "brickmakers" mentioned, but the prices for "moulding and burning bricks." (Hening's Statutes.) And in the York County records, in 1692, John Kingston, "brickmaker," is allowed £7 against the estate of Robert Booth "for making and burning Bricks." In the inventories of dead men's personal property there are several mentions of "brick moulds" necessary in making the brick.

The three great public buildings of the colony during the eighteenth century were the college of William and Mary, the capitol and the palace. I have the manuscript accounts of the expenses entering into the erection of the first, but among them I can not find any evidence that the brick was imported. I infer, however, from the items for "brick moulds," that the brick was made on the spot. The committee appointed to superintend the building of the capitol was invested with power to buy certain materials in England; if brick had been one, it would certainly have been mentioned, contributing, as it did ,the largest element in the structure. The first capitol building was burned down, however, fifty years later, and a great contest arose as to its future location. Some were for abandoning Williamsburg altogether. Finally it was decided to rebuild at the old place, and in John Blair's diary we read: "Nov. 15 (1751).—Fair. Skelton fired the last kiln for the Capitol." The same fact is noted concerning the other buildings.

In addition I may say that I have carefully examined the files of the Virginia "Gazette" for three years, from 1736 to 1739, recording the ships entered in the James, York, Rappahannock and Potomac rivers; but there is not a single cargo of brick reported in all that time except one of 100,000 brick from New England, which came, doubtless, in response to some pressing demand.

How, then, did the idea of houses made of imported brick become so firmly fixed in the popular fancy? I conceive that the impression arose from mistaking the meaning of "English brick." Houses in Maryland and Virginia were, it is true, made of "English brick," but this did not mean imported brick. The statute for building up Jamestown in 1662 called for "statute brick," which meant brick made according to the English statute. In the early days of the colony, previous to the passage of the navigation law, there was a large trade with Holland, and a great many Dutchmen came to Virginia, where they became useful citizens. I find, in the Virginia records, mention made of "Dutch" brick, meaning brick made after the Dutch fashion—a large order of brick, such as I am informed, one sees in the walls of houses in Charleston, S. C. Sometimes, it seems, the colonists preferred Dutch brick, and the reason for the distinction between the two kinds was obvious to them. When in the course of time the circumstances of society had changed, the phrase "English brick" came to be understood as "brick imported from England."

LYON G. TYLER,
President of William and Mary College.

OBITUARY.

Christopher McDermott, Wellington, Ohio.

Again we are called upon to chronicle the death of one of the faithful. Christopher McDermott, secretary of the Wellington Machine Company, Wellington, Ohio, died Sunday, July 8, at Poland Springs, Me., where he had gone in the vain quest of relief from Bright's disease, with which he had been afflicted during the past year. The dread disease assumed serious symptoms early in the spring. Evidently, Mr. McDermott was suffering from same during the last N. B. M. A. convention, at Philadelphia, though he presented then the same genial appearance and happy mannerisms which had always characterized him. Kindliness and good fellowship were such marked traits in his nature that he was conspicuous in that body where those traits are common. He had been an enthusiastic member of the National Brick Manufacturers' Association for many years and had attended almost all of our annual conventions. He was at one time president of the National Association of Clay Machinery Manufacturers. He was a good friend and a wise counsellor always, and his associates will miss his voice and mourn his absence sincerely. Few men had a wider acquaintance among the brick manufacturers of the Nation than "Mac," as his friends loved to call him. He was born in Berea, Ohio, in 1861, moved to Wellington when he was twenty-one, and has been an active and influential citizen of that community ever since. He was a Mason of high degree and took an active part in local political and social affairs. He was buried at Wellington, Wednesday, July 11. His wife and three children survive him.

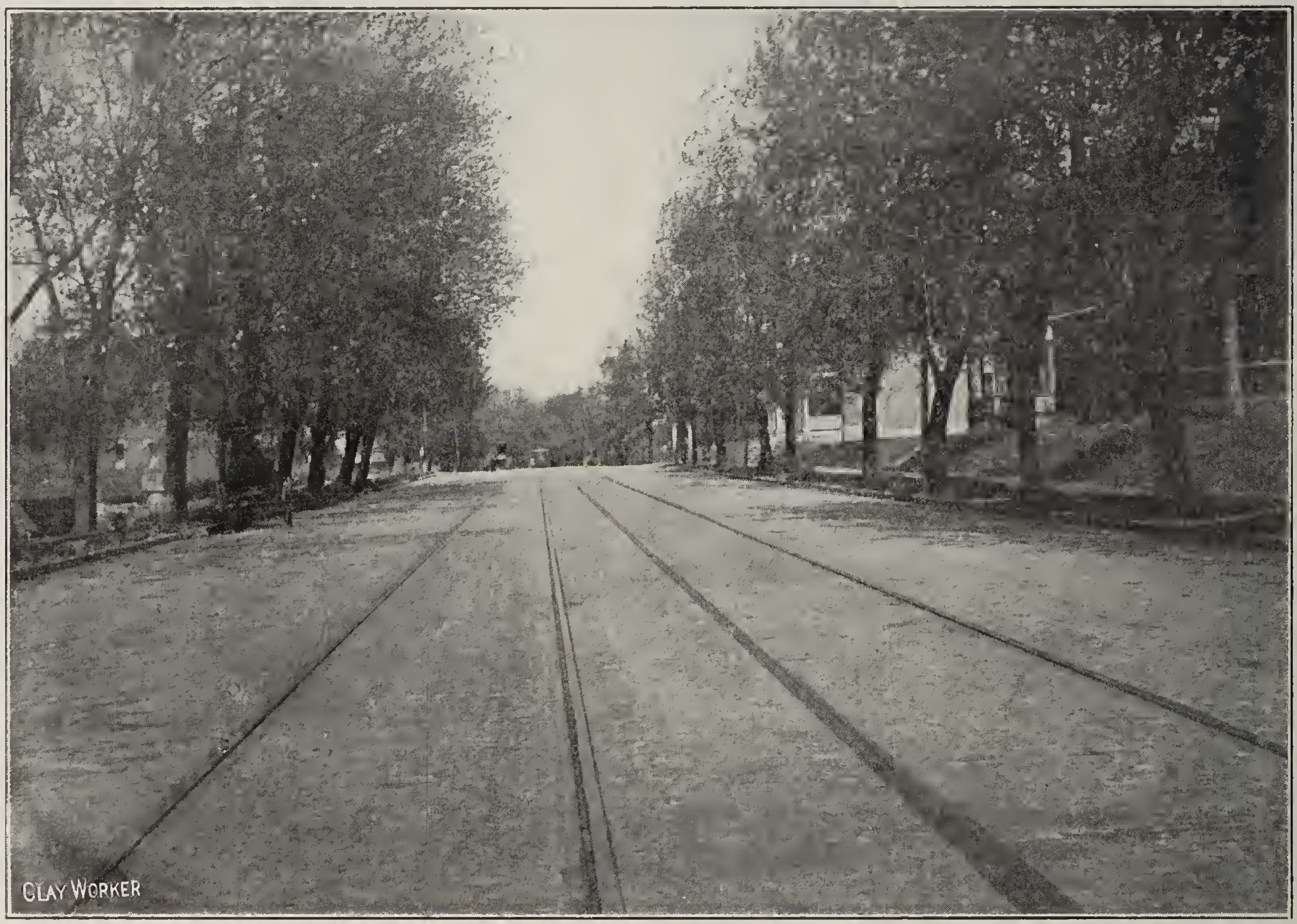
The Late Christopher McDermott.

Written for THE CLAY-WORKER.

AT THE BUCKEYE CAPITAL.

Columbus a Brick City—Fine Brick Paved Streets and Splendid Brick Homes and Commercial Structures.

AS THE READERS of THE CLAY-WORKER are aware, Ohio ranks first among the States in the production of pottery, and she is not far behind in the production of building brick. Indeed, it is likely that she is first in the production of fine pressed brick and also in the production of paving brick, so it is but natural that her capital city should be a brick city. The visitor is always impressed with the excellence of the brick pavements of Columbus. They are so smooth that they are easily kept clean and they have proven so durable that the cost for maintenance is almost nothing, compared with the cost of repairing asphalt, wood block and other paving. These advantages are so marked that of late years none scarcely but brick pavements have been put down. In this respect the city's record is one that paving engineers may study with profit.



Neil Avenue, Near Ninth, Looking Towards Ohio State University. A Fine Brick Pavement as Good as New After Ten Years' Use.

In 1887, there was less than a mile of brick paved thoroughfares in Columbus. Today there are over eighty-three miles of brick paved streets, to which will be added another four or five miles during the present year. This is a remarkable record when it is considered that the city has, all told, but one hundred and twenty-two miles of paved streets. The popularity of brick, as compared with asphalt, is indicated by the 1904 record, when two-tenths of a mile of asphalt was laid and over four miles of brick pavements put down. Not only is the relative cost of asphalt per mile more than that of the brick streets, but the brick pavements wear so little that it is plain to every observer that they will wear for years to come, while the asphalt streets deteriorate faster and faster with each succeeding season. The brick paved streets, even where the traffic is heavy, show very little wear, and on the light traffic residence streets there is no perceptible wear at all. The accompanying illustration of Neil avenue, one of the principal residence thoroughfares, demonstrates this fact clearly. It has been down now nearly ten years and yet is a perfectly smooth, clean street. It is not unreasonable to claim that it will be a good street twenty years hence, and in the meantime will cost the taxpayers nothing virtually for repairs.

The excellence of these brick paved streets is due in no small degree to the quality of the brick used. Ohio pavers are unsurpassed in quality. Not only this, but they are laid right. The specifications adopted by the National Brick Manufacturers' Association are followed closely in Columbus, and this of itself insures an excellent pavement. The streets illustrated are laid with cement fillers, but the tar filler is used on many streets; indeed, the tar filler seems to be preferred by the city officials.

The accompanying table gives a summary of the paving statistics of the city, from 1887 to 1905 inclusive, and an inspection of same bears out the statement that brick pavements are most in favor in Columbus, and that by actual experience they have proven superior to other paving materials both in point of durability and sanitary perfection.

The building brick interests of Columbus are also flourishing. The demand for building brick has increased amazingly of late years. Brick structures are the rule, frame structures are the exception, and there are few cities in the country that can boast of so many excellent brick residences as Columbus. Evidently, the builders of Columbus believe in patronizing home industries, for the product of the Columbus Brick and Terra Cotta Company, the Iron Clay Company, and other neighboring pressed brick manufactories is to be seen in almost every block within the city limits, while the downtown business thoroughfares are lined with imposing commercial structures and modern skyscrapers, faced with brick and terra cotta. We picture one of the best of the latter, the Columbus Savings and Trust building, which is undoubtedly one of the finest office buildings in the United States. The lower stories and the cornice are faced with terra cotta, exceptionally ornamental in character. It was furnished by the Northwestern Terra Cotta Company, of Chicago. The intervening stories are faced with handsome iron buff spot brick from the kilns of the Iron Clay Company. Mr. D. C. Meehan, the head of the latter company, naturally takes much pride in this building, though there are a goodly number of other imposing structures in the city constructed of his brick, to which he can "point with pride."

The Columbus Brick and Terra Cotta Company, of which Mr. L. G. Kilbourne is president and general manager, has done its full share in the building of the city. Dozens of immense buildings bear the stamp of excellence, or shall we say, the brand of excellence burned in at the factory at Union Furnace. The writer had the pleasure, recently, of visiting the plant, which is one of the finest, cleanest and best-managed face brick plants in America. One distinctive feature of the plant is the housing of their employes. Many cottages have been built by the company and sold to the men on small installments. They are well kept, the yards are clean, and the fences whitewashed. The entire surroundings are in marked contrast to the usual environment of brickyards. The plant is a veritable town in itself; it has its postoffice, bank and supply store, and the waterworks is a pleasing feature. With the employers working for the employes it can readily be seen the effect this has upon congeniality, good fellowship and efficiency among the men. Mr. Ben S. Fisher, the superintendent, was very gracious, and the two hours spent in and around the works and down in the clay mines which, by the way, are very dry, clean and lighted by electricity, were thoroughly enjoyed.

Tenth Avenue, Near Neil, Columbus, Ohio.

Mr. Fisher said that he had never known the press brick trade to be in so prosperous a condition as at present. "Why," said he, "we could do three times the amount of business we are doing now if we had the kilns and the men, and even then we could not begin to supply all our customers." In the month of May alone they shipped over 1,600,000 bricks. The stock sheds that had been completely filled during the dull season are now practically empty and buyers must take their turn and wait for the brick to be burned. They have a daily output of 60,000 brick and never have a bad burn.

This plant is not the exception in regard to orders, for all the brick firms in and about Columbus are running to their full capacity and at that find difficulty in meeting the demand. Many outside firms—as the Nelsonville, Hanover, Anderson and Shawnee Works, furnish thousands of brick for Columbus every year. The following table, which gives the number of permits for brick dwellings and houses, the total number of permits issued and the estimated cost as a monthly report of the last two years, brings forcibly to the reader's mind the great advance in the brick building trade.

—1904—

	Brick	Total	Estimated Cost
January	18	71	$303,810
February	44	141	239,840
March	52	144	258,960
April	73	171	287,565
May	83	190	725,365
June	73	179	355,640
July	64	171	490,190
August	69	175	299,260
September	84	208	427,050
October	58	159	242,835
November	10	32	35,410
December	1	11	8,950

—1905—

	Brick	Total	Estimated Cost
January	17	52	$101,045
February	9	42	81,635
March	93	211	494,010
April	123	321	685,135
May	109	241	510,130
June	91	209	618,010
July	65	192	425,540
August	68	193	767,385
September	76	203	341,025
October	65	187	370,945
November	34	137	232,775
December	44	141	479,765

Among the best known of Columbus' common building brick plants is the Fish Pressed Brick Company, which has a daily capacity of 30,000. They use a 14-chamber continuous kiln, and operate four Whittaker presses, and two of four dry pans. They use a carbonaceous shale, which is very difficult to burn and takes a great deal of care. They have exhausted their shale pit at this plant and ship shale down from their other factory, which is known as the Capital City Brick Company. This latter yard is in the northern part of the city and also uses a carbonaceous shale from a large shale pit, which has an average depth of twenty-five feet. Instead of a continuous kiln, they use twelve down draft kilns of about 50,000 capacity. They use American Clay Machinery Company machinery throughout. The daily output

LENGTH OF STREETS IN MILES IMPROVED EACH YEAR FROM 1887 TO 1905 INCLUSIVE

MATERIAL	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	TOTAL MILES	TOTAL COST
ASPHALT	1.392	2.093	3.202	3.759	1.279	1.765	.565	1.413	.416	.178	.175	....	.114	....	.501	.295	.284	.253	.211	17.833	$ 1,025,181.40
STONE	.790	2.913	2.061	.185	....	.083	....	1.553	.034	.181	....	....	....	.082	....	.077	.045	....	....	8.034	$ 642,741.54
HAYDEN B	....	1.220	1.164	2.657	5.380	4.357	....	....	....	....	....	....	....	....	....	....	....	....	....	14.778	$ 747,297.86
BRICK AND BLOCK	.856	5.011	12.757	4.410	13.463	8.975	.861	939	2.956	5.351	1.564	1.668	.837	.220	.689	1.243	1.091	1.760	4.249	68.900	$ 2,988,956.60
BOULDER	.736	1.267	1.067	....	1.326	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.306	$ 45,637.34
MACADAM	....	....	....	....	....	.225	....	2.108	1.879	.904	.169	.126	.209	....	....	.173	.572	.770	1.009	8.144	$ 174,799.80
	3.774	12.504	20.251	11.011	21.448	15.345	1.424	6.013	5.285	6.614	1908	1.791	1.160	.302	1.190	1.788	1.992	2.783	5.469	121.965	$ 5,624,013.54

is about 33,000, the dryer having a capacity of 40,000. Exhaust steam is used during the day and live steam at night. During the past few years, they have made quite a number of hollow blocks. Last year they had considerable trouble with the labor proposition, but are getting along fairly well now.

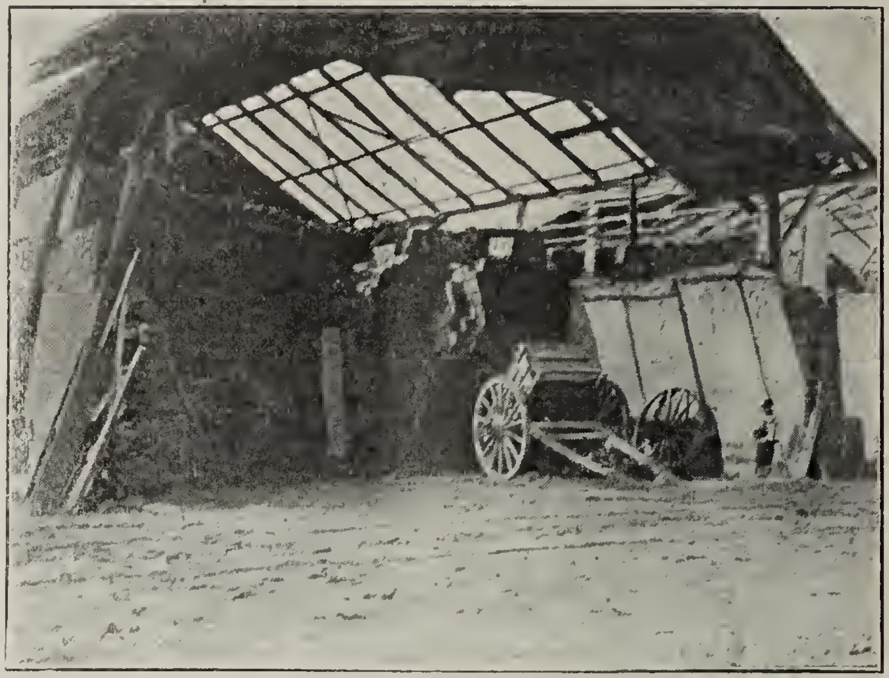
The Street Plant uses surface clay, but they dry their brick in a furnace fired, hot floor dryer. They have only one press and hence not a very large output. The Schmitt plant, which is located on Parsons avenue, in the southeastern part of the city, make building brick from surface clay, incorporating slag and cinders to prevent their ware from cracking and checking. They make a good brick and have a capacity of 26,000 daily. They dry their ware in the open and burn in the old-fashioned clamp kilns. The Conrad yard uses the river bottom clay and has a daily capacity of 24,000. They use steam power. The Ford plant has a capacity of 15,000 per day, using surface clay. The Dow plant has a Hercules six-mold machine, one dry pan and six kilns. The firm uses shale and has a capacity of about 1,780,000 per year. Nearly all the remaining yards not mentioned here have about the same capacity, using mostly surface clay and drying in the open and burning in the open top kilns. The combined daily output of all the plants within the city limits is about 200,000.

Columbus Savings and Trust Building.

The Groveport Roofing, Tile and Brick Company, which is virtually a Columbus industry, since they market nearly all their product in Columbus, has been written up in The Clay-Worker during the past year. They have remodeled their plant in a few respects, changing the systems of getting clay from the field to the plant and improving the dryer. They are getting along prosperously.

The Taylor Station plant, nine miles from Columbus, might also be considered a Columbus firm, as it, too, markets a great deal of its brick in Columbus. They use a shale and have a capacity of about 75,000 per day. They use a Freese machine and have twelve down draft kilns and four up draft. They are now using gas and find it very satisfactory, as it is cheaper and more easily controlled than coal or wood fire.

The Ceramic Department of the Ohio State University, at Columbus, is taking advantage of the summer vacation and is moving into its large new building, one of the finest on the beautiful O. S. U. campus. Nearly seventy students enrolled in the Ceramic School the past year, and Professor Orton is looking forward to the ensuing year, confident of a still larger attendance. The Ohio School of Ceramics has developed into one of the world's greatest ceramic schools, and with such a man at the head of it as Professor Orton, the future of this department of the University is more than encouraging.



A Good Burn, in an Up-Draft Kiln, of Common Building Brick.

The Richardson-Lovejoy Engineering Company, consulting engineers, has been exceedingly busy and has found it necessary to increase their office force and enlarge their facilities. They are superintending the erecting of a number of plants and have many ceramic investigations under way. There has been an increasing demand for Mr. Richardson's excellent books, "Burning Brick in Down Draft Kilns," and "Kiln Records."

Glimpse of an Old-Time Brickyard, Columbus, Ohio.

The Jeffrey Manufacturing Company, Columbus, is running its immense plant, which covers several acres, full handed. The demand for Jeffrey conveying and elevating machinery grows apace with each season. Jeffrey products are shipped to every State in the Union and to all civilized countries the world over. Any reader of THE CLAY-WORKER, at home or abroad, who has a conveying problem to solve, may find an easy solution by communicating with the Jeffrey Manufacturing Company.

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.

THE SUMMER QUIET is on, and the falling off in building activity is marked. The month of June-July is rather quieter than was the corresponding period a year ago. This, however, does not mean that the season is abnormally dull, nor is it taken to indicate the approach of a disastrous period for construction and material men. Last year at this time the reaction was just setting in from a period of enforced quiet, due to the protracted teamsters' strike, and all the building that had been held up pending definite settlement of the differences was being carried forward with a rush.

This year, however, things are down to normal basis again. The activity of one and two months ago has simmered down considerably, but even at that there is plenty to do. In every part of town it is almost impossible to go more than a block without sighting a new building shooting up.

So that while things are quiet, comparatively speaking, every local dealer is finding plenty to do, and that it is hard enough to get away for a vacation, even if the east winds and summer resort weather handed out by the weather man in the early part of the summer are giving place to a few broilers that make one sigh for lake trips, shady woods and mountain scenery.

Among the more pretentious buildings which have been and are still keeping the builders and building material men busy are a number of new homes which Chicago clubdom is "blowing itself" for. The new club houses either nearing or in process of completion or soon to be started aggregate in estimated cost nearly $3,000,000. Of these the new Illinois Athletic Club's half million dollar home, fronting in Michigan avenue, is the biggest thing in progress just now, and has taken more than half a million brick in its construction. These brick are used chiefly on the sides and in the rear.

Besides the Illinois Athletic Club, the Chicago Automobile Club is to erect a new building at the corner of Plymouth court and Van Buren street, having long since been obliged to abandon their old home at 243 Michigan avenue, and having at present no headquarters but their office in the Fisher building. Besides storage space for nearly one hundred machines, there will be three cafes in the new structure, and adequate provision for all the comforts of the members. The automobiles will enter directly into the garage through a long passage under the building. From this tunnel members returning from tours can gain immediate access to the club house proper and head straight for the baths, leaving the chauffeur to attend to the machine. The garage is to be separate from the club house proper. It will be three stories in height. The dividing wall will be both fire-proof and sound-proof.

Speaking of automobiles, the recent campaign against gasoline tanks under the alleys at the rear of garages seems not unlikely to redound in the interest of the brick and concrete man. While there is probably no safer place for the storage of gasoline, nor any safer way of handling it than to keep it stored from six to fifteen feet below the ground in air-tight iron tanks, and bring it by air-tight pump to the machine in the garage, so much furor was raised by one of the local papers that even the automobile people themselves are demanding new legislation from the City Council.

The heads of the city fire department, on whom the council members are likely to depend largely for advice, are in favor of the system in vogue in New York city. There the iron tanks are enclosed in a vault generally of brick, though sometimes of concrete. A relief pipe extends up into the air from this tank to let out fumes of gasoline, if any accumulate. The "White garage" in this city had its tanks thus immured, and it took the street superintendent's gang of wreckers two hours to dig through the concrete wall and extract the tank. The legal ground the city took, it should be explained, was that no private individual or corporation has, under the State law, any right to occupation of public property, such as an alley. The statute now forbids even the rental of such privilege from the city.

It certainly begins to look as if for cleanliness and strength and safety the clay product materials were about to demonstrate their superiority and reap a harvest. The investigators stirred up a commotion at the Union stockyards and showed that at least some departments of the work had been allowed to remain in antiquated channels from which they should have been routed long ago. Now old soggy, saturated wooden floors are coming out, and in their place must be put materials which will not absorb blood and grease; which can be cleaned readily, and which will be durable. Here the brick man, the tile man and the concrete man have an inning. Now the automobile appears to be bringing more business to the clay products mill. All hail to the clay worker.

Another fine lot of brick are going into the construction of Chicago Athletic Association's new annex being erected in Madison street, around the corner from the main building in Michigan avenue. This addition is to be twelve stories in height, and will have the same length as the older building. It is to cost in the neighborhood of $550,000.

A lot of big jobs are in contemplation, but not yet put into the architects' hands. The "watchdog of the lake front," Montgomery Ward, is about to remove himself and his business from his lookout post before Grant Park, and erect an enormous plant on the north branch of the Chicago river, for the future conduct of his great mail order business. The cost of this new plant will be large. The mail order concern is moving in order to have better transportation facilities by rail and water. This will obviate much of the present use of teams, and this is said to have appealed favorably to the heads of the company since the great teamsters' strike of little more than a year ago. The new plant will be a rival of the model one just erected by Sears, Roebuck & Co., another large mail order firm, on the West Side.

Bonner, Marshall & Co. recently had a course in red tape in making a shipment of 30,000 brick across the border into Canada. The brick were encaustic tile brick for the floors and inner walls of the power house of the Montreal-Quebec Electric Street Railroad Company. The brick are made to withstand not only wear and tear, but the chemical changes which are more or less active about electrical plants. Mr. Bonner had to make affidavit that the price he put on the brick in the bills of lading represented the actual fair cost. The brick furnished for this Montreal job are made by the Logan Clay Products Company.

The National Brick Company is keeping up the fight and common builders are down to $4.75 a thousand, the lowest they have touched in a good many years. The brick war is still on. Some weeks ago a number of brickmakers struck without apparent cause at one of the independent plants, and the cry went up that the old alleged conspiracy for which two officers of the Illinois Brick Company (the so-called "trust") and two officers of building material trades unions were fined in the criminal court, was afoot again. Scarcely was the outcry raised, however, before whatever difference there was was settled and the men returned to work.

S. S. Kimbell & Co. have the contracts for three power houses for the Chicago City Railway, which has just got a new franchise from the city council, and is preparing to better its service. The power houses will be put up at Twentieth and Dearborn streets, Fortieth street and Wabash avenue and Sixty-third street and Wentworth avenue, and will take a total of about 350,000 brick. The Purington Continental brick are to be used for the fronts and repressed buff brick for the interiors. The same company has an order for sixty thousand Purington Continental brick to be used in the new Englewood hospital, Sixtieth and Green streets, and 125,000 Athens dark repressed brick for St. Sylvester's Roman Catholic church, Palmer avenue and Palmer square; also forty thousand Purington Continental brick for the county commissioners, to be used in a new building on the county hospital grounds. SCRIP.

Written for THE CLAY-WORKER.

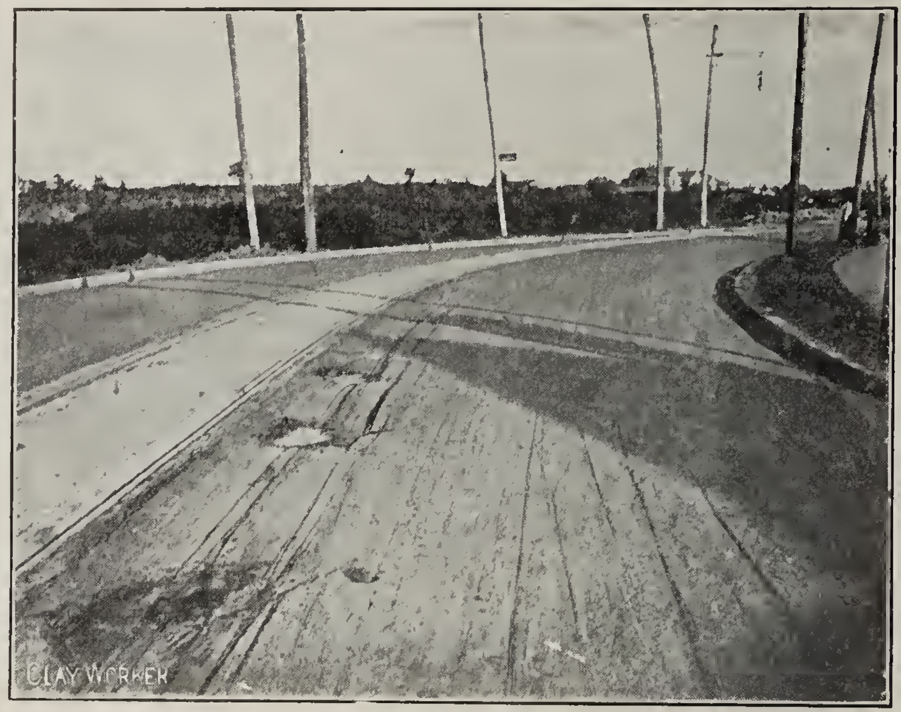
FAILURE OF BITULITHIC PAVEMENT IN SHREVEPORT, LA.

ABOUT TWENTY-FIVE years ago a party of adventurers came through the cities of Ohio, Indiana and Illinois, and perhaps other States, promoting and selling what they called a new kind of sidewalk pavement. It was made of coal tar, broken stone, gravel and sand. The promoters of this kind of sidewalk pavement were gifted in speech, but unconscionable in purpose. However, the alluring recommendation of sidewalks so constructed were sufficient to induce a large number of people to invest. Many people, however, were living at that time, whose recollection of their experience with coal tar used as a lubricant on their old-time wagons, together with the exercise of a little common sense caused them to decline to be inveigled into the use of any such stuff for such a purpose. There are plenty of wise people now; in fact, a sufficient number of wise people to know that no such stuff would be used for streets and roadways but to impose upon them, or for some ulterior motive. Who is there who has not sufficient common sense to know that coal tar and broken stone or gravel will not make a street fit for the purpose of traveling?

View No. 1—Crockett Street, Shreveport, La., Between Market and Texas streets. Bitulithic Pavement Laid in January, 1905. Photographed September 26, 1905. The Repairs Amounted to About 1,200 Square Yards.

History repeats itself, 'tis said. Now, there is abroad in the land promoters who are doing their level best to induce municipal officers to pave streets with a tar macadam. The results are not hard to define by the thoughtful taxpayer. In these pages, some months since, we chronicled the failure of bitulithic pavement in St. Louis. We now bring to the attention of our readers, nearly all of whom are interested from the viewpoint of taxpayers, a similar situation at Shreveport, La., where some two or three years ago a stretch of that pavement was laid by the Southern Bitulithic Paving Company. Now the taxpayers there feel that a gold brick was palmed off on them, for, instead of a good, durable pavement, they find, after three years' trial, that it is short lived and unsatisfactory. The accompanying views, which are reproduced without any retouching and show the streets exactly as they appeared when the photos were taken, tell the story of the inefficiency of bitulithic paving more graphically than words.

The first bitulithic pavements laid were not altogether satisfactory, even when inspected by the city, but plausible excuses were given for the various defects, and a promise to make good alleviated the fears of those who were suspiciously inclined. Later developments, however, showed that the fears were only too well founded. Instead of improving the quality of the pavements laid, the company seems to have lost the art of laying bitulithic, as the accompanying photograph will show.



View No. 2—Louisiana Street, Shreveport, Lake to Jordan Streets. Bitulithic Pavement Laid in January, 1905. Photographed August 14, 1905. View Shows Deep Holes in Pavement, Just Before Reaching Hamilton Terrace.

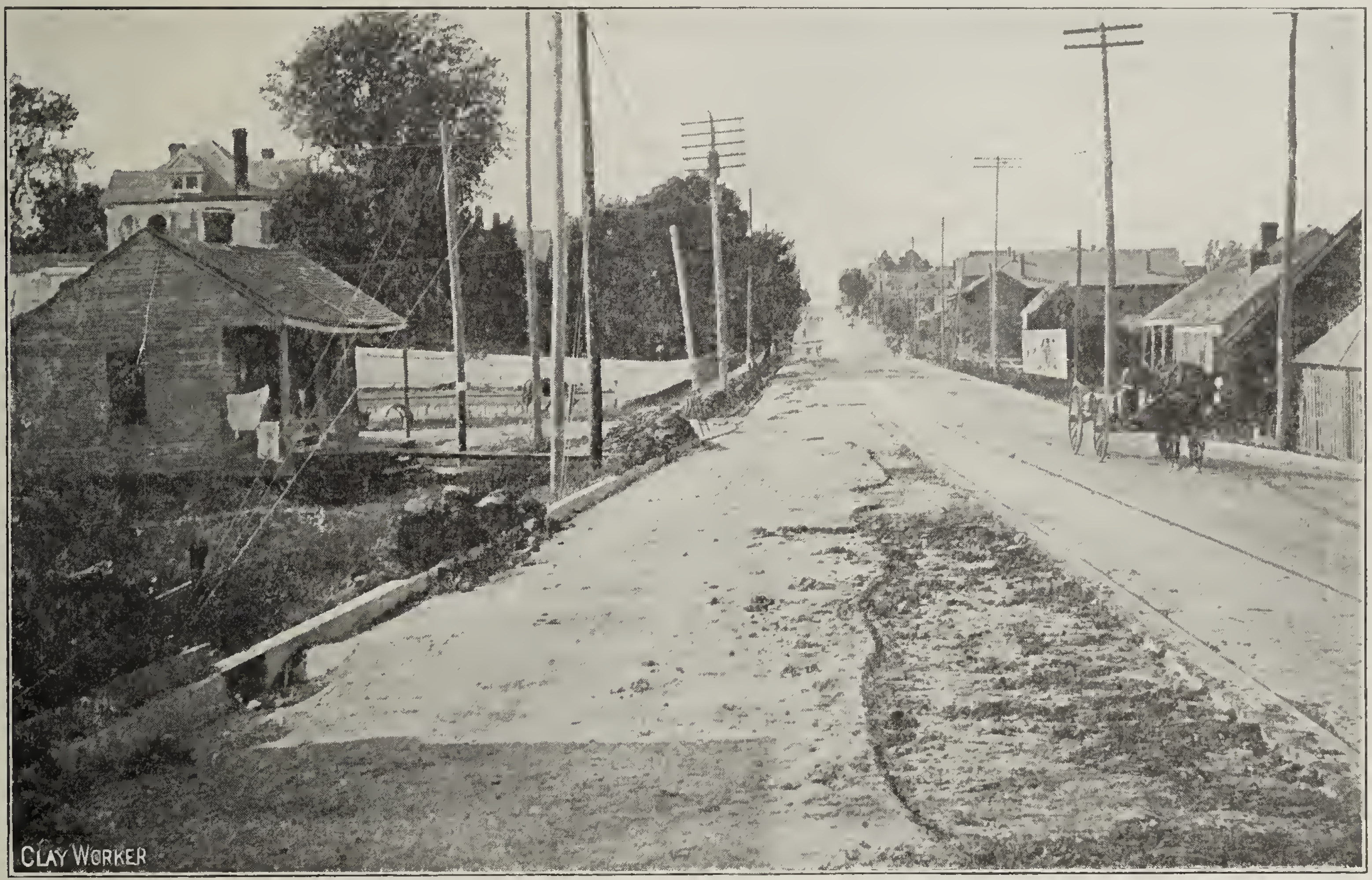
View No. 3—Louisiana Street, Shreveport. Bitulithic Pavement Laid January, 1905. Photographed September 15, 1905. The Cuts for Repair Work Were Made Near Lake Street.

On January 25 of last year, the Southern Bitulithic Paving Company completed a stretch of pavement on Crockett street, from Market to Texas streets. Although the weather conditions, the crushed stone and the coal tar cement used by the company were all up to the standard quality required, and although the immediate results appeared to be satisfactory, illustration No. 1 shows the condition of the pavement after a few months' wear. Extensive repairs, even at that early date, were being made. Although the expense of these repairs were not borne by the city, as the city was protected by the company's guaranty, it is logical to conclude that if the pavement had been properly laid, or had had the requisite wearing qualities, these repairs would have been unnecessary. The total repairs of this street amounted to 1,200 square yards.

The pavement on Louisiana street, from Lake to Jordan streets, which were completed in January, 1905, is in still worse condition, as will be shown by the illustrations, Nos. 2, 3 and 4, inclusively.

View No. 2 was made from a photograph, taken August 14, 1905. This shows deep wears in the pavement at a point just before reaching Hamilton Terrace, as well as wagon tracks.

View No. 3 shows cuts made for repair work from Lake street to about 1,200 feet south of Lake street, on west side of car tracks only. Extensive repairs were required on the east side as well. This view was taken September 15, 1905.



View No. 4—Louisiana Street, Shreveport, Near Jordan Street. At this Point Nearly 1,500 Yards of Pavement Was Resurfaced. Photographed September 14, 1905.

View No. 4 was made from a photograph taken September 14, 1905. At this point in Louisiana street, nearly 1,500 square yards of pavement had to be resurfaced.

JOHN BULL IS INTERESTED.

"The British Commercial Agent," in reviewing the present industrial prosperity of the United States, says that in 1905 we absorbed a million emigrants without it affecting the labor market. The farmers turned out $6,415,000 worth of products of the soil, and, encouraged by prosperity, we have bought lots of luxuries from abroad. The thing that concerns the British Agent most, however, is that we are doing an enormous export business these days, notwithstanding that home consumption is greater than it ever was, and he is wondering just what will happen, dreading the consequences when the market for our manufactured products slumps off a little at home and we turn a bigger stream of it abroad. Well, now, if Europe insists on sending her surplus labor over here, it is only fair that we should use it, and use it better than they do, returning the resultant product of the use of such labor back to the old country. If we get the best of it, it is coming to us.

Written for The Clay-Worker.

A SHORT TALK ON PAVING.

THE CITY FATHERS of Suffolk are up against the bitulithic repairing proposition. When the bitulithic advocates were talking bitulithic paving, they said, "We can take out a piece of this paving to repair water pipes and put in back in thirty minutes, and you can not find the repair." We had a pipe to burst under this new street about ten days ago. The water came boiling through the surface in eight or ten places in a radius of about ten feet square, and spouting up about one inch high in streams about the size of a lead pencil. This was not repaired for five or six days, and during this time the street swelled and raised up from two to three inches, and resembled some of the bumpy streets of 'Frisco after the 'quake.

It was a puzzle to know how to fix the bad place, as the builders of the street had moved all their patent machinery to another city. After standing a week they cut out a piece about six feet square and repaired the leak, but not the street. The repair they claimed they could fix in thirty minutes was left with broken stone and has been standing in this condition for a week. No repair made yet, only to fill up the hole with broken stone, and this stone is scattered all over the street. This is one of the strong points I put up against this street, and the time has come when the repairs are looming up. If this street had been built with brick the leak could have been fixed the day it happened, for it would not take a week to find out how to make the repair on a brick street. Any intelligent workman could take up and relay the brick in a few minutes and make a good job of it. On the other hand, this leak was not repaired for a week and the water, under high pressure, was forced through under the subgrade for many feet in every direction, weakening the foundation.

As I said in my last letter, most of the water pipes are put down with iron pipe, and laid very near the surface, which means we are going to have a great many broken pipes, and that many holes are to be cut through the street. Who will do the repair work? Shall we send to Boston every time a pipe bursts? Why has this 6x6 cut not been repaired in two weeks, when they claim, "Any one can repair it in thirty minutes?" This street has only been down sixty days and already shows signs of rapid wear. It is only one square on our main street, put down as a sample, at a cost of seven thousand dollars. The city has awarded contracts for about fifty thousand dollars more of this paving and about the same amount of vitrified brick. We will watch the results in these two streets with great interest, and in a few years the streets can talk for themselves.

I would advise any street committee or city engineer to recommend vitrified brick streets as the highest standard for smoothness, durability, sanitation, easiness to take up for sub repairs, and sure footing for horses and easy to keep clean. My observation in many cities in this country has convinced me that brick streets should be rated first of all streets. When I say a brick street, I mean a brick street properly constructed on a good sub-grade, with number one vitrified brick. Then you have the best pavement on the market today.

Suffolk, Va., July 10, 1906. H. L. JACOBS.

Written for THE CLAY-WORKER.

FUEL VALUES.

[SECOND PAPER.]

Analysis.

ELEMENTARY analysis of coal is not of much service in determining the heat value of the same, but in the approximate analysis we can obtain more satisfactory data in that the results and percentages are obtained in practically the same manner and changes that the coal undergoes during combustion in the furnaces. By this method of analysis four data are obtained: first, moisture; second, the volatile combustible matter (gas or hydro-carbons); third, the fixed carbon (coke), and, lastly, earthy matter (ash). Generally, no cognizance of either sulphur or phosphorus is taken. This so-called proximate analysis seemingly is a very simple matter, but it requires skill and experience to obtain trustworthy and accurate results. To determine the amount of moisture a given quantity of coal is dried at a temperature of about 212 degrees to 220 degrees Fahrenheit for one hour. The resultant loss gives the moisture. The residue is then subjected to destructive distillation until nothing remains but coke in the crucible. This next resultant gives the volatile combustible matter. This coke is next burned to ash, thus determining the percentage of ash. By subtracting the weight of the ash from the weight of the coke we establish the weight of the fixed carbon. The following method of calculating the theoretical value from percentages derived from proximate analysis has been adopted as the standard:

The value of fixed carbon is taken as 14554 British thermal units (B. T. U.), and for the value of volatile combustible matter (gas, hydro-carbons) a factor of 20115 British thermal units has been adopted, less 3600 British thermal units lost by being utilized for this distillation. A British thermal unit is the quantity of heat required to raise one pound of pure water one degree Fahrenheit. The value of such calculation is shown in the following two calculations, where both coals come from the same mine:

No. 1.

			B. T. U.
Fixed carbon	.4509 x 14544 equals		5558
Gas	.3086 x 20115 equals	6207	
Loss	.3086 x 3600 equals	1111	5096

Value of one pound coal in B. T. U 10654

No. 2.

		B. T. U.
Fixed carbon	.4899 x 14544 equals	7125
Gas	.2791 x 20115	
Loss	.2791 x 3600 equals	4609
		11734

These figures show conclusively that these two coals are not of equal value. A confirmatory calorimeter (an apparatus used for measuring the amount of heat contained in bodies) test was made, which practically gave the same differential results:

No. 1 equals	9450 B. T. U.
No. 2 equals	10626 B. T. U.

It should be borne in mind that these heat results are based on theoretical values, which can very seldom be created in practice, yet the system of calculation furnishes excellent means for comparing the values of coals with each other.

Again, take the values of two Pennsylvania coals, one figuring 14415 B. T. U. and the other 14221 B. T. U., which show them to be of practically the same heat value, but they cannot be used to advantage in the same furnace in that one is a coking coal, burning with a long flame, and the other burns with a short flame, leaving a bulky quantity of coal behind.

Combustion

is nothing but the destruction of the combustible part of the fuel by uniting with the oxygen that is supplied from the air and thereby creating heat. Perfect combustion of fuels only results when the necessary quantity of air is furnished and used by highest possible oxidation of the combustible fuel parts, thus thereby forming water and carbonic acid as gaseous products. Hydrogen is only susceptible of one degree of oxidation forming water, while carbon is capable of dual oxidation—that is, it may combine with one part of oxygen, thereby forming carbonic oxide, or it may combine with two parts of oxygen, forming carbonic acid gas, by the oxidation of carbon under various conditions. The volatile combustible matter (hydro-carbon) is composed of hydrogen and carbon in various fixed proportions. Upon these said volatile gases coming into contact with a certain limited amount of air, are decomposed into water and free carbon under the evolution of heat. This carbon creates heat by coming into contact with an additional amount of oxygen and is transformed into carbonic oxide (a colorless gas susceptible of higher oxidation) and thereby furnishing more heat with the proper amount of air. This carbonic oxide is oxidized to form carbonic acid and thereby producing the best efficiency for carbon as a fuel. Two well-known forms of the hydro-carbon produced respectively 23513 and 21343 B. T. U. and require for each part of gas 17.4 and 15.0 of air. Carbon burned to carbonic oxide gas gives off 4452 B. T. U. and necessitates the use of 5.8 pounds of air, but this same carbon, if supplied with 11.6 pounds of air under proper conditions, is converted into carbonic acid gas, giving off 14500 B. T. U.

Thus it will be seen that in the burning of coal, varying conditions occur, so that it is largely a question of good practice and judgment on the part of the kiln fireman to obtain the best results. It should be borne in mind, however, that absence of smoke is no proof of perfect combustion. (See carbonic oxide gas.) It is an accepted fact that, in most cases, waste of fuel occurs by using too small a quantity of air rather than by using air in excess.

Furnaces

in the brick industry in this country are generally of two types, one with grate bars and one without, the so-called pot furnaces. Grate bars are of three types—the horizontal, inclined, and step grades. The so-called pot furnaces are, as a rule, a square, four-cornered box, into the top of which the coal is fed, and is supplied with an opening at the front in the bottom to take out ashes and clinkers. But some burners use a so-called clinker hanger in the front of the ash pit to keep the ashes from rolling out and to practically convert the furnace into a bastard gas producer.

Sometimes pot furnaces are equipped with vertically hanging grate bars placed just above the ash pit to admit air through the incandescent fuel, while others use the so-called clinker bar to prevent air from passing the incandescent fuel from below. These two practices are radically different from each other in their purposes, but each one in its proper place is a good thing, dependent upon the character of the ware. Great care should be taken in adopting pot furnaces, as the size and dimensions of same are largely governed by the character of the fuel.

The writer recalls a case where the pot was made so small that it formed coke (made a so-called saddle), made an arch and did not slip down to feed the fire. This caused a hollow fire, and, while the furnaces roared, the kiln kept on getting cooler all the time. At another place the pot furnaces are not constructed right in that the accumulated ashes very readily obstructed the air passages for rapid combustion. This particular furnace was all right up to a certain time, but after that the heat could not be raised fast enough.

In Germany the pot furnace is known as the Pult-Fenerung, but they generally use a fire-clay grate in connection therewith. Oftentimes a force blast is used in some furnaces, but care should be taken to have them properly constructed, especially if the coal clinkers much.

On a horizontal grate almost any kind of fuel can be used if care is taken to have the spacings of the grate bars of the proper size for the class of fuel, as, for instance, ¼-inch to ¾-inch for pea and slack, ½-inch to ⅝-inch for nut, and ¾-inch to 1-inch for lump coal.

The number, size and angle of grate bars used in the inclined grate furnace is practically limited by the size of fuel. The step grate is used very sparingly in this country, but in Germany, where it is used very largely, the greatest care is taken to adopt the right pitch for the class of fuel used. Furnaces should always be built large, as they can at any time be made smaller by leaving in ashes or clinkers. A burner should be in a position to furnish heat quick when it is demanded, but with a small furnace the heat production is necessarily limited. It is also good policy to supply the furnaces with auxiliary air ducts, so that the burner is in a position to convert or control the character of his fire.

Draft.

Be sure to have plenty of draft and large flues, especially so when these outlets are to be used for drying off or water smoking, as at that period large volumes of gaseous fluids must be rapidly moved to prevent condensation of water vapor. But in burning coal the volume of gases to be moved is not so large, hence smaller flues will meet all requirements. Some coals need a stronger draft than others, dependent a good deal upon its character, as well as the thickness of the bed. All kilns should be supplied with dampers, preferably close to the stack, to regulate the draft, that is, its pulling power, but some burners damper kilns by retarding the ingress of air at the furnace. Either method serves the purpose, but are not equally adapted to all kinds of ware.

Draft plays a powerful role in burning brick, as the oxidation of fuel is largely controlled by the damper, and the character of the clayware governs the character of the fire in that different wares demand different fires, to-wit: oxidizing, reducing (smoky fires caused by insufficient air supply), and intermittent or periodic oxidizing and reducing fires. All kinds of coals and types of furnaces are not adapted to effect all the above-named conditions either in a practical or economical manner. Furnace stacks and kilns have to be planned according to the demands of the fuel and the class or character of the clay-ware. Thus one type of kiln may be all right to burn paving brick and yet be a complete failure when it comes to face brick. Draft can also be controlled by an exhaust fan system, which in most cases is very satisfactory, as it is easy to control and is not subservient to atmospheric influences.

Gas Producers

are apparatus designed to convert fuels into a gaseous state and in some instances fill a long felt want. They are of two types—suction and the pressure producer. In the pressure producer the gases are forced out at the top of the fuel line, carrying with the gas a percentage of condensible tar, which upon any extended travel is lost as fuel.

The writer attended a series of tests in using gas from a pressure producer, and it was conclusively proven that use of such gas was not economical, in that the heat utilized in making the gas was lost and the tar deposited in the gas duct made the cost higher than if the coal had been used directly in the furnace. It may be possible that with a suction producer, where the outlet for the gas is lower down in the producer chamber and thereby the tarry products split up into gas, the results are more beneficial. The above statements refer to use in periodic kilns, but with a continuous kiln system or a system having regenerative features there is very little doubt about the economy of gas producers.

Producer gas has some very good features, as, for instance, heat can be regulated as to quantity and quality, almost instantaneously lighted or extinguished, freedom from ash on ware and in kiln flues.

Sulphur.

This is contained in a more or less large proportion in coal. It is of harm only in certain claywares, but its chief detriment in the soft bituminous coal is that it is primarily the cause of deterioration and spontaneous combustion when stored. The slacking of this coal is practically due to oxidizing of the sulphur compounds either from the air or from percolating water in time creating heat. If the heat so produced is in excess of radiation, then the temperature may rise so high that the coal may catch fire. At any rate, by thus oxidizing, a percentage of the volatile hydro-carbons will be lost for future use. If a cheap and effective way could be devised to store soft, sulphury, bituminous coal, the terrors of a coal strike to the brick industry would be in a great measure relieved. JULIUS J. KOCH.

The Emergency Accident Cabinet, which the Accident Cabinet Company, of Kalamazoo, Mich., is placing on the market, is destined to fill a long-felt want in factories, where accidents of any kind are liable to occur. It contains articles necessary to properly dress a wound, while waiting the arrival of the physician. The majority of accidents in factories are not bad enough to warrant calling a physician, but often prove serious if not made aseptic and dressed with clean bandages. This Accident Cabinet insures all articles being on hand in the proper place at the proper time. Their advertisement can be found on page 75.

Written for The Clay-Worker.

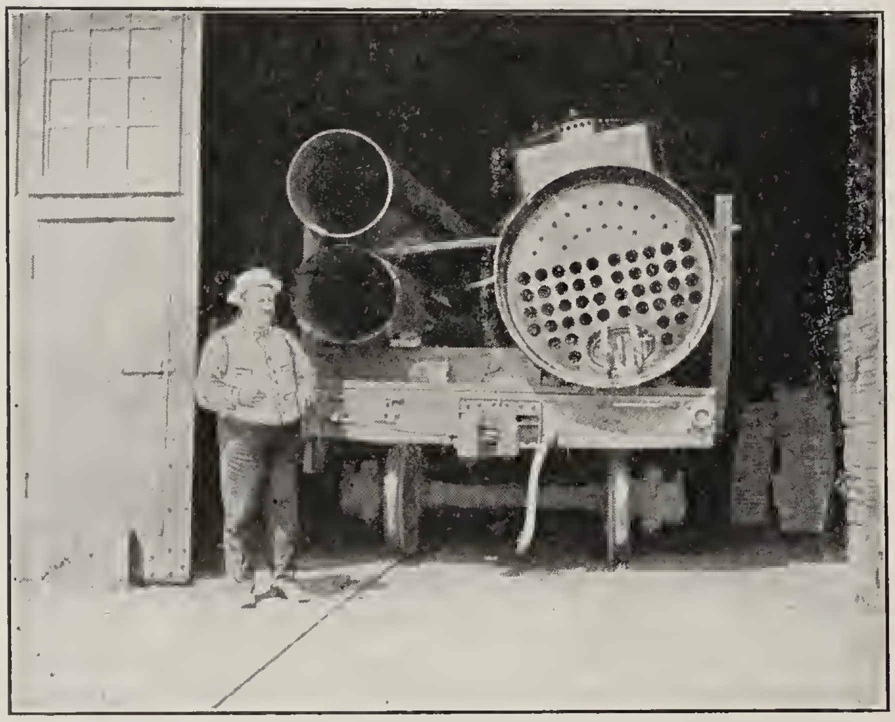
A TRIP TO GALESBURG.

The Producer Gas Experiment—Improved Methods of Handling Shale—W. S. Purington's Latest "Wrinkles."

KNOWING from experience that there is always "something doing" out of the ordinary at the plants of the Purington Paving Brick Company, the writer, one pleasant day in June, very gladly accepted an invitation to accompany D. V. Purington on one of his occasional trips from Chicago to Galesburg. From the western metropolis to the great paving brick center, it is just one hundred and sixty-three miles, and this was covered in just three hours and forty minutes, taking the "Q" flyer at Chicago at 5:00 p. m. and arriving at Galesburg at 8:40. The train time was divided into three parts, before dinner, dinner, and after dinner, with brick talk through it all. On arrival we were met by Assistant Secretary Terwilliger, who imparted the information that rooms, with bath, had been reserved at the hotel, and that all was well at the works.

An Hour with Andrew Harrington.

Before going to the brick plants—there are four of them—we visited the immense factory of the Frost Engine Company, where we found genial "Andy" Harrington, who directs the destiny of that concern, hard at work. On every hand were unmistakable signs of prosperity. The plant has grown considerably since our last visit, the most notable improvement is in the foundry department, where an immense hydraulic press has been installed, with which boiler heads and other heavy pieces of sheet metal, weighing thousands of pounds, are accurately pressed into form as easily and quickly as the deft housewife forms the covering for a cherry pie—or any sort of a pie, for that matter, except those of the open-face pattern. Every department of the factory is running full-handed.



Andrew Harrington at the Entrance to the Shipping Department.

The chief products of the plant are engines and boilers, but they turn out an immense number of "Frost" dry pans in the course of the year. The demand for these pans increases with each recurring season, which Mr. Harrington attributes to two things, chiefly the merits of the pan itself and Clay-Worker ads. He modestly claims that the pans are not surpassed for capacity and durability, the two most essential points. However, Mr. Harrington gives the Clay-Worker full credit for its share in the extension of their dry pan trade. Since the pan was first advertised, 'steen years ago, there has not been an issue of The Clay-Worker but has contained an ad of the Frost pan similar to that on page 115 of this issue.

As the reader will see by the accompanying view, Mr. Harrington's shadow grows none the less as his years and business cares increase. The snapshot was made at the main entrance to the shipping department, in which, as is usually the case, several carloads of boilers, etc., were waiting to be hauled away.

At the Purington Paving Brick Company's Plants.

The terminal of the East Galesburg trolley line is at the very door of the factory office of the P. P. B. Co., a handsome brick structure, which we have pictured in The Clay-Worker a number of times. After the customary greetings, the indefatigable vice-president and general manager, W. S. Purington, presented us with a sombrero, a supply of which they always have for the benefit of visitors, and told us that the plant was ours for the taking, and we proceeded to take such portions as we could with our camera; the results are submitted in the accompanying engravings. Before starting out on the tour of inspection, we were fortified with a good dinner, which is served daily in the basement of the office, and participated in by all the officers, the office force and vis-

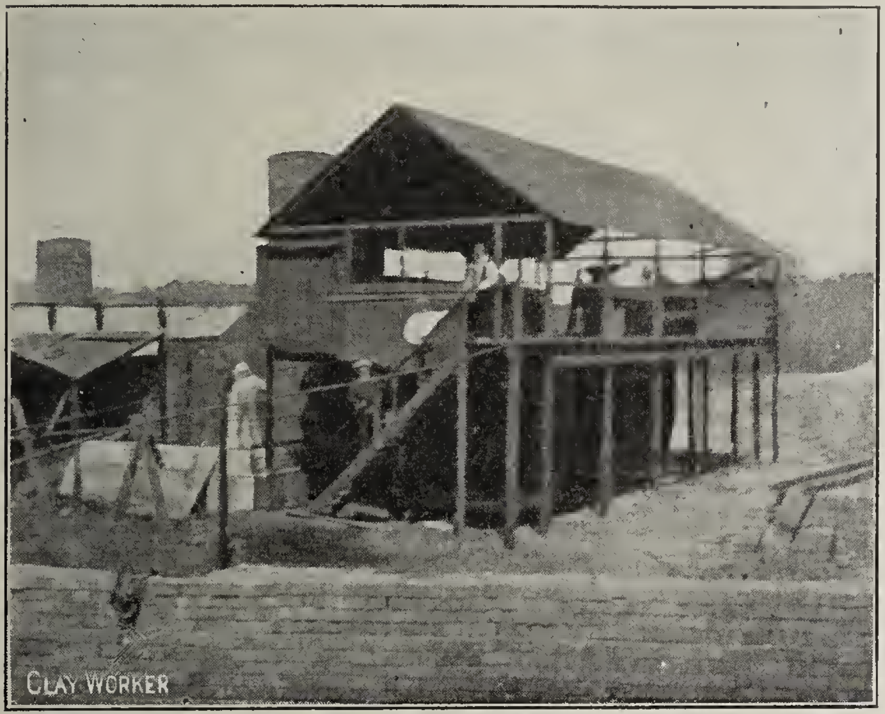
Lake from Which the Purington Paving Brick Company Draw Water for Stripping Clay.

D. V. and W. S. Purington and Visitors Starting on a Tour of Inspection.

itors, and it is a rare day when there are not one or more of the latter present.

Of course, the first inquiry was made in regard to the producer gas experiment which has been going on at the plant for some weeks past. We found Mr. W. B. Chapman in charge of this work. We are sorry to say the results have not been as satisfactory as were hoped for. This is due, in a large measure, Mr. Chapman explained, to the character of the coal. In answer to our question, "How are you getting along?" Mr. Chapman said:

"Very well, considering. I find that the problem here is, not how to burn pavers with producer gas, but how to make producer gas from the peculiar coal at hand. It has been fairly well demonstrated that producer gas will burn paving bricks satisfactorily without pre-heating either the gas or the air. The time required for water-smoking can be shortened one-half and two men can fire several kilns. The quality of the brick is equal if not superior to brick burned with direct coal fire. It has also been demonstrated that a temporary shutdown is not necessary for removing the soot and tar from the flues. A new method which uses compressed air for cleaning the flues has been installed and is working very satisfactorily. The Morgan Construction Company are now modifying their producers, so that they will handle the difficult coal used at this plant, and it is expected that when the next tests are made a satisfactory saving in the quantity of coal required will be made and the time of burning will be greatly reduced. No smoke at all is seen about the kiln. As the accompanying illustration shows, two Standard Morgan Continuous Gas Producers are attached to an oblong down draft kiln, having a capacity of 120,000 pavers. The producers are located at one end of the kiln, and on either side of the kiln is a main flue about 24 inches square. Gas nozzles, 6-inches by 8-inches inside, connect the gas mains with the interior of the old ashpit, where the gas burns. The furnaces are 5½ inches apart. The fire doors are used for regulating the admission of air. No grates were used in the furnaces and no changes had to be made except the addition of a few loose brick to form a checker work baffle wall at the entrance to the bag."

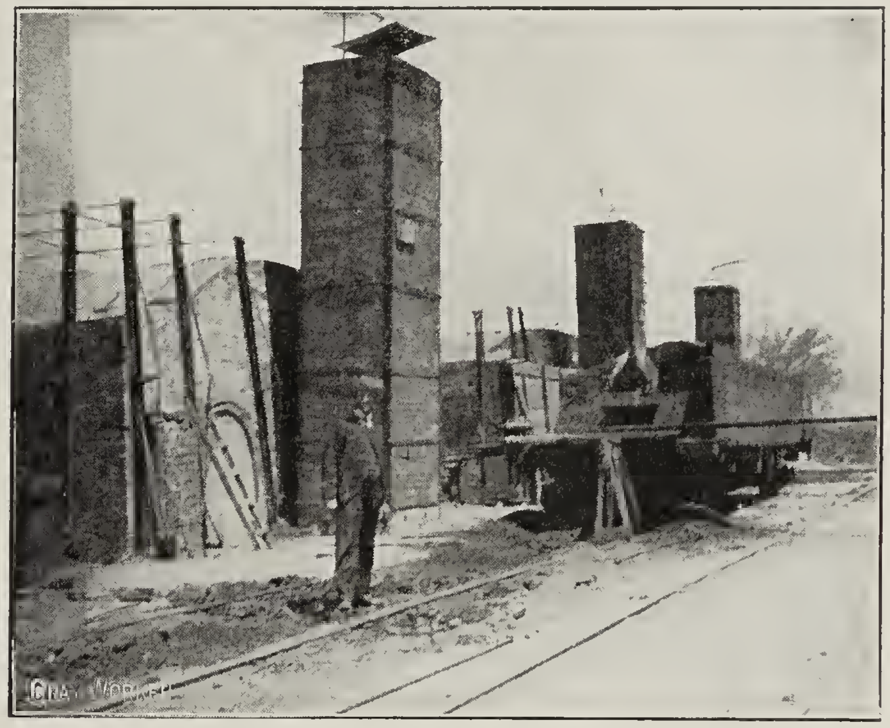


The Producer Gas Plant Erected at the End of the Square Kiln, Into Which the Gas Was Taken Through Flues on Either Side of the Kiln.

One of the Hoppers Above the Producers, Into Which the Coal is Fed.

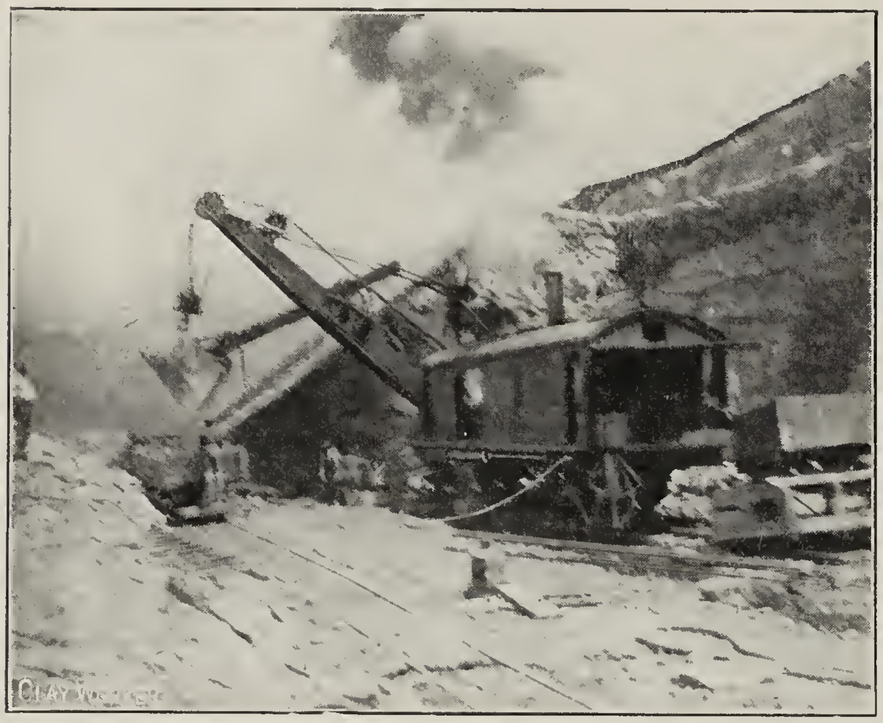
Yearly Capacity Nearly One Hundred Million Brick.

The immensity of the Purington Paving Brick Plants, their splendid equipment and great capacity must be seen to be fully appreciated, but a few figures will convey to the mind of the reader the advancement made since this company started its first plant at Galesburg, in 1890, at which time paving brick was considered by many an experiment. That year they turned out 10,000,000 brick. The past year the output totaled 78,600,000. At the rate they are now working, the present year will exceed the latter figure by several million. These brick are made on five Chambers machines. Seventy per cent. of their output is repressed pavers, the balance of their output is plain wire-cut brick, most of which are sold in the Chicago market for front brick and known to the building trade there as "Continentals." These are not repressed, as erroneously stated in the last issue of The Clay-Worker. To make and burn these brick requires 18,000 tons of coal per month. Up to the present time their average monthly shipments this year has been 1,400 cars. Their daily shipments average fifty-five carloads.



Delivering Coal to Kilns—The Old Way.

The digging and delivering of the raw clay to the machines is of itself a formidable task, which would require an army of men if the work were done largely by hand in the old-style way. They are still stripping several feet of clay from the top of their shale bank by the hydraulic method, which has been fully described in previous issues of The Clay-Worker. They no longer use dynamite to throw down the shale, but instead are using two steam shovels, one which works in the upper part of the face, throwing down twelve to twenty feet of the upper shale, which is picked up, together with a part of the lower shale by a second shovel, a 125-ton monster. This method mixes the shale from top to bottom of bank more effectively than the old method. Here we noticed two of W. S. Purington's latest inventions, one a pneumatic cylinder placed at the side of the steam shovel, with which the engineer, by touching a lever, is able to draw forward the loaded cars as they are filled, bringing the empty car within the exact sweep of the dipper. One end of a rope is attached to the end of the piston and the other end is attached to the car to be drawn forward. It is a very ingenious arrangement, and saves a lot of bother. Another new and novel feature is a tender which supplies fuel for the shovel and which is coupled to the shovel. It is in the form of a transfer car. They use two of them, one being filled while the other is in use. Eighteen hundred tons of shale are taken from the bank and hauled to the plants each day. They are now pulverizing all the shale for two or more plants at the No. 2 yard, the clay passing from the dry pans into a hopper, from which it is drawn into cars as wanted, and hauled by a miniature locomotive of their own to the neighboring plant, a distance of about a mile. The scheme is working so satisfactorily that Mr. Purington says should he ever build additional plants, he would arrange to deliver all the raw clay at one point, prepare it and deliver it in cars ready for the machine.



Loading Shale in Cars with Marion Steam Shovel.

They have comparatively few brick on the yard, and from present indications they will not be able to add materially to their stock, for they have already booked orders that will take the brick about as fast as they can make them during the coming months.

One of the pleasant and unexpected features of the trip was a visit to the Country Club, of which Mr. W. S. Purington has recently been elected president, and thence to the station in his new touring car, his son Stewart acting as chauffeur.

PETER B. GIBSON'S LITTLE TALK ON THE ANDRUS PRESS.

The speaking likeness of Peter B. Gibson, secretary of the Scott Manufacturing Company, St. Louis, Mo., on page 11, and his talk on the Andrus press is a very clever piece of "adsmithing." We hope that "Dixie" Scott can pose as well in the August number as his partner has done in July, and can tell us something equally interesting in regard to the "Press that Scott Builds."

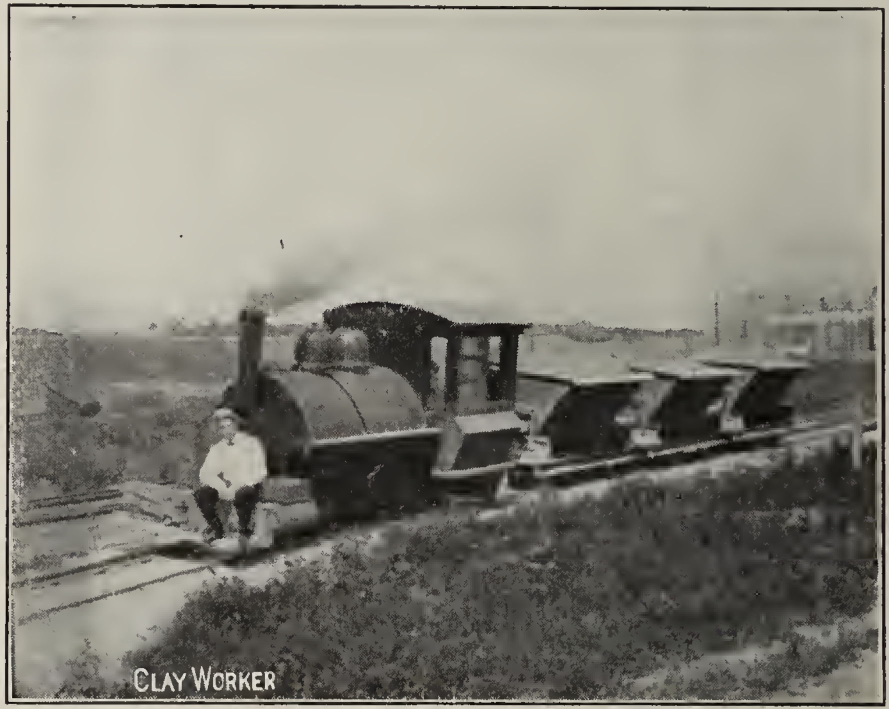
Written for THE CLAY-WORKER.

PHILADELPHIA BRICK AND BUILDING NEWS.

THESE LOVELY summer days are busy days, indeed, for the brickmakers of Philadelphia. Building operations are extensive and naturally with a good demand prices of brick are staple, and range about as follows: Salmon, $7.00; hard, $8.50; machine stretchers, $10.00, and hand-made stretchers, from $14.00 to $15.00.

Mr. William Conway, the genial first vice-president of the N. B. M. A., is running his plant to its full capacity. He has contracts to deliver brick for from two hundred and fifty to three hundred houses. Also, for a large structure at Seventeenth and Buttonwood streets, requiring a large quantity of face brick and hand-made stretchers. The building is a part of the Baldwin locomotive works, and is designed for the construction of electrical engines, etc.

The tract of land known as the Dickinson tract, in South Woodbury, N. J., has been sold to a Philadelphia capitalist, who will at once begin the erection of a brick plant, with a capacity of 30,000 per day, and give employment to sixty men.



Hauling Pulverized Clay from Plant No. 2 to Plant No. 3.

Brickyard of H. M. & C. B. Siner.

After the recent death of Joseph L. Siner, the gentle, courteous and genial brick manufacturer, his two sons have continued the business under the name of H. M. & C. B. Siner. Their plant is a new one, situated on K street, below Nicetown Lane. This is a good site, with enough material to last for many years. Their Martin machine turns out about 3,000,000 brick per year, common red building brick. The three kilns have a capacity of two hundred thousand each, stacking them thirty-six high, and the men working under cover, thus enabling work to continue the year round.

H. M. & C. B. Siner have contracted for all the bricks they can supply this summer; in fact, they are all sold up. Their building operations are confined principally to the surrounding vicinity and Kensington. We wish all the prosperity possible for this firm and feel assured of their success.

John Hanarty & Son,

Brick manufacturers, Fifty-eighth and South streets, turn out anywhere between three and four million bricks per year, using a Chambers machine. They have occupied this site for the past nineteen years, pursuing the even tenor of their way, which leads on, let us hope, to happiness and fortune. Mr. Hanarty, Sr., who gave me desired information, is the personification of genialty and quiet heartiness of manner that immediately puts one in good humor with the world in general. Business is brisk at present, and times are good. They have a contract to supply Mr. Crawford with bricks for his building operations at Fifty-first and Fifty-second streets. Three hundred thousand for Mr. Ledger, builder; 250,000 at Sixty-first and Fitzwater streets; 120,000 for Mr. Conner, at Fifty-second and Chestnut streets; 60,000 at Thirty-ninth and Wallace streets, and 45,000 at Fifty-second and Chestnut streets, for Mr. James M. Holm, builder.

Thomas J. Rose Brick Manufacturing Company,

Erie avenue and G street, are working hard just at present furnishing bricks to fill contracts, i. e., 1,000,000 to Mr. Snyder; 500,000 to Mr Janke and Mr. Janiszenski.

The last two declare themselves brothers, and without doubt, reconcile the affair in some way incomprehensible to Americans. At any rate, we surmise that one cares for soda water, while the other is apparently indifferent to same.

These building operations are in the vicinity of Rising Sun Lane, while there are others at Memphis and Ontario streets and Erie avenue.

Another contract calls for 500,000, and still another for 375,000 for McChesney & Biddle.

F. Seitters' Sons,

Brick manufacturers, are supplying brick for seventy-five houses at G and Westmoreland streets.

We regret to announce the demise of Mr. Fred Seitter, which took place in the early part of the year. He was stricken with a sudden attack of gastritis, which resulted in his death after a few hours. Mr. Seitter was a man of genial temperament, well liked among his fellow-men, and as one nearby brick manufacturer remarked, "We miss him; he was such a nice neighbor."

To be a good neighbor, in heart and spirit—to another—or many others—that is something truly worth while. Mr. Seitter attended the convention—we saw him at the banquet, and we know he enjoyed it in every sense. Life is made up of temporary pauses, that we may stand aside and allow one among us to pass into the "Great Beyond."

Chambers Brothers Company, Fifty-second street below Lancaster avenue, reports plenty of business and a good season generally. They have recently supplied the brick machines of the Independent Brick Company, Trenton, N. J. This is a large concern of recent formation. They will manufacture 75,000 bricks daily, and are at present building a dryer and a down draft kiln. Chambers Brothers Company is also ready now to ship the machinery for the Hanover Brick Company, of Whippiny, N. J., for their duplicate plant.

George Carnell, machinist, North Fifth street, is having his share of contracts and states his general satisfaction at the condition of affairs. This is a good season and prospects generally fine for brick machinists and brick manufacturers. Mr. Carnell has recently placed a brick machine in Jersey City and two in New York.

The brick manufacturers have had four good years in succession, and this year they have all they can do. In many yards the word is passed, "All sold." Bricks are bringing good prices and the list of wealthy brick manufacturers is steadily increasing.

McAvoy & McMichael, Twenty-seventh and Dickinson streets, report business prosperous, prices fair, but a great scarcity of brick owing to the great demand. This firm is supplying brick for building operations in South Philadelphia, but the greater bulk for West Philadelphia. For instance, their contracts call for bricks for one hundred and sixty-three houses at Fifty-second and Kingsissing avenue; eighty-five houses for Humphreys, at Twenty-seventh and Dickinson; an apartment house at Thirteenth and Ridge avenue; the Bell Telephone, south of Girard avenue and east of the river, sewer work requiring about 300,000 hard brick. Altogether they have enough to keep them out of mischief the whole season and are looking cheerful and healthy under the hopeful circumstances.

McAvoy & Morris, Thirty-first and Dickinson, are rushed to such an extent that business has lost much of its pleasurable side. May was such a strenuous month with them, that they would rather give up the brick business than struggle through another like one. The builders agree to await their turns, and the brick manufacturer lays plans accordingly. Lo! to the consternation and disappointment of the latter the builders are all demanding their bricks at one time. It kept one man busy answering the 'phones all day, both ringing with the one cry, "Send us bricks;" "We're losing money." Truth to tell, the brick manufacturers are losing money; and to add to the difficulty, labor is scarce, men are unreliable, working for a few days and then dropping off for a vacation, on their own account. Common red bricks are plentiful, but the shortage is in the salmon and machine stretcher, and has been since the first of May.

McAvoy & Morris are supplying bricks for the Allen operation, fifty-three two-story houses; fifty-four two-story houses for Boggs; fifty-nine for another builder. The Quaker City Realty-Operation, at Fifty-seventh and Spruce, and Fifty-third and Walnut streets; Gallagher operation, at Twenty-ninth and Dickson, one hundred and fifty houses and one hundred and fifty-three houses for Pitts. Many of the houses are almost completed, and McAvoy & Morris are breathing regularly once more. They have refused to supply any more contracts and anticipate being all straightened out again by September.

Charles A. Young, Twenty-fourth and McKean streets, with his Chambers stiff mud machine, turns out 13,000,000 bricks per year. His six kilns, stacked thirty-nine high, have a capacity of 230,000 each. He is delivering 1,500,000 hard and hard made stretcher bricks for a power house at Beach and Poplar streets; one hundred and eighty-four two-story houses at Sixteenth and Shunk; 1,500,000 bricks for a storage warehouse, to be erected at Fifteenth and Vine. Another large contract for Tenth and Race; also pressed bricks and hard bricks for a church at Third and Fitzwater streets. Besides these there are many small building operations of various sorts and conditions. Mr. Young has his home directly across from the brickyard and it would be a shame not to walk among his flower beds and view the wealth of bloom that greets the appreciative guest. Roses, pansies, geraniums of all sorts, fronted by a foreground of soft, mossy green carpet, that is cooling and refreshing.

Webster & Keyser, at Thirtieth and Tasker streets, have on hand at present, owing to the backsliding of contractors, about 4,000,000 bricks piled up. Their contract to supply brick for the operation at Thirty-fifth and Jackson was broken because the railroad forced the contractors to use the Montello bricks. A second contract to supply 1,500,000 for an operation fell through because the contractors decided to use concrete. These are a few of the small disappointments that beset the brick manufacturer on his way through life, but the firm of Webster and Keyser will just keep on smiling and looking straight ahead. They are supplying bricks for two-story houses at Sixty-third and Elmwood avenue, Sixty-fourth and Elmwood avenue; also 100,000 bricks for a factory at Forty-first and Market.

We regret to announce the demise of Mr. Michael Gaynor, which occurred in June. Mr. Gaynor was seventy-one years of age and died of weakness from age and heart trouble. The brick business will be continued by Mr. Gaynor, Jr.

M. E. Lockington.

THE NEW OFFICERS OF THE BALTIMORE BUILDERS' EXCHANGE.

At the recent annual meeting of the Baltimore Builders' Exchange, the following officers were unanimously elected: President, Theodore Mottu (now serving a second term); first vice-president, Theodore F. King; second vice-president, Joseph T. Lawton; third vice-president, Frank G. Boyd; secretary, Albert D. Klein, of J.; treasurer, B. F. Bennett. Mr. Klein is the secretary of the Champion Brick Company, and one of the most popular members of the N. B. M. A. He has done very effective work for the Exchange the past year as secretary of the Committee on Permanent Exposition, in arranging for the permanent exhibit of building supplies and materials which was opened on the fifth floor of the Exchange building on the evening of June 11th. We congratulate the Builders' Exchange on having on its Executive Board a man of such force and energy as Mr. Klein.

ANNOUNCEMENT.

The Seventh Annual Summer Meeting of the American Ceramic Society at Beaver Falls, Pa., August 1, 2 and 3.

The Seventh Annual Summer Meeting of the American Ceramic Society will occur at Beaver Falls, Pa., beginning August 1, at 9 a. m., and closing August 3. The Board of Trustees, in designating the above location, has merely followed the general wish of the society which was expressed by resolution at the last meeting at Philadelphia.

The hotel headquarters will be the Grand Hotel, but as this hotel and others in Beaver Falls are apt to be well filled, those attending are advised to write to F. W. Walker to obtain quarters for them, which he kindly offers to do for all who apply to him.

Following the general custom of the society, there will be no papers or formal sessions at this meeting. The occasion is designed for cultivating the social and personal side rather than the literary and scientific—a side which during our strenuous winter meeting can not receive the attention which it deserves and which the good of the organization requires.

In the formal winter meetings, tne time is wholly taken up in the reading of papers and their discussion, and in the business of the society. The record of these meetings is made public, and to a measureable degree any one who buys the literature may enjoy their benefits. But in the summer meeting we have no records; we make no speeches, and only those who come can share in the benefits. It is the common observation that it is in these close personal conversations, in the good fellowship, and the cross-table talks, that the advantages of the society are most fully realized. Certain it is that on these occasions much of the esprit du corps of the society has been created, and the delightful personal relations established which make the organization an inspiration to its members.

The Ceramic Industries of the Beaver Valley.

The locality abounds in points of the greatest interest. Few localities support in so small a compass so large a line of industries. There are stoneware and white ware potteries, fire brick, paving brick, building brick plants, sewer pipe plants, encaustic tile works, metal enameling establishments and glass works. And in addition, only a few miles away, easily accessible by rail and trolley cars, is East Liverpool, the Staffordshire of America, with numberless plants and many other industries not listed above. In fact, the embarrassment lies in determining what to see among so many, rather than what to do with the time.

The Itinerary.

Messrs. Ernest Mayer, F. W. Walker, and the other members of the A. C. S. in this district, have appointed themselves a committee to arrange this matter for us, in order that all may gain a well-balanced idea of the industries of the district. Since we can visit but a small proportion, the service of the committee in arranging a profitable order of events has been very valuable.

The following is the program, as tentatively arranged:

Wednesday, August 1.

9 a. m.—Visit the Dawes and Myler Metal-Enameling plant.

11 a. m.—Visit the American Porcelain Company.

2 p. m.—Visit the American Sewer Pipe Company's plant near New Brighton.

Thursday, August 2.

Take the early trolley or steam cars to East Liverpool, Ohio, where we will be met by John Sant and a committee of other members of the society, who will escort us through the principal potteries, flint and spar mills, and supply factories. After a full day in this most interesting city, the party will return to Beaver Falls.

Friday, August 3.

9 a. m.—The Beaver Falls Art Tile Company.

11 a. m.—The Mayer Pottery Company.

2 p. m.—The Fallston Fire Clay Company.

3 p. m.—Sherwood Bros. Stoneware plant.

It is possible that changes will be made in this itinerary, but it may be safely assumed that all changes will be such as will add zest to the occasion.

The railroad situation in Ohio, owing to the two-cent fare law, and the relatively small size of our summer attendance (twenty-five to forty) prevents any concessions being secured for this body. But, the summer time is pre-eminently the time of cheap travel and without doubt, almost any one who seriously plans to come will find the transportation problem easily solved.

Now is the time to cut loose from the daily grind and sally forth in search of pleasure and inspiration. Where else can a ceramist find as much of either as in the society of his friends and co-laborers, foregathered from the four quarters of this broad land? Come and join us. Add your quota to the happiness of the event.

For the Board of Trustees,

EDWARD ORTON, JR., Secretary.

Written for THE CLAY-WORKER.

CLEVELAND BRICK NEWS.

PAVING BRICK MANUFACTURERS in and about Cleveland are rejoicing over certain conditions which exist and which have resulted in the boosting of the price of their product. Early this season paving brick was selling briskly at $10 per thousand. Now it is bringing $12.00 and promises to advance again.

The reason for this boom, according to the brick manufacturers themselves, is the big demand which continues. Many of the makers early in the season loaded up with orders at the lower figure, not looking for such a boom as has appeared. Now the orders continue to roll in with but a limited capacity left in the plants to fill that demand.

"Brick is going to be brick in Cleveland this fall," is the significant remark of Charlie Deckman and other makers are agreeing with him. The five paving brick plants in this immediate vicinity have an output of upwards of 125,000 paving brick a day.

The demand for common building brick continues as good as heretofore. Barkwell & Bradley, the distributors for the thirteen local brick plants, having a capacity of nearly 700,000 common building brick per day, report that every brick is sold as fast as it can be turned out and that more could be disposed of if obtainable.

Pressed brick is in as much demand as the other grades. Even the cement buildings erected in this city are being faced with that product. The big plant of the Cleveland Hydraulic Pressed Brick Company is rushed to capacity all the time, the making of the regular product deferring a number of important experiments which are being made by the managers and superintendents of the plant.

Building permits are being issued in Cleveland at the rate of half a million dollars a week. These are the face values of the permits which, if the truth were really known, are much greater, for the fear of the tax assessor is always present in the mind of the builder when he gives the value of the structure to be erected. These prmits do not contain any phenomenal buildings or any structures of great value, but include factories, stores, dwellings, flats and such like.

Never in the history of Cleveland has such solid and continuous growth been shown as during the past few months.

Work is proceeding rapidly with the construction of the new brick plant at Bedford, at which all kinds of bricks will be made. Ground has been broken and representatives of the promoters are busy buying machinery. The plant will be in operation in a few weeks, it is believed.

Many of the building contractors and brick dealers of Cleveland accompanied the Builders' Exchange on an outing to the Thousand Islands during the last week in June. They report a most enjoyable time. During their trip they visited the exchanges in various cities and some of the brick men delved into the interesting phases of their business in the places through which they traveled.

There has been a distinct revival of the fire brick business in this section of Ohio. In some of the buildings recently designed, the main walls are built in the usual way of steel columns, protected on the sides with terra cotta and porous blocks, while the arched ceiling effect has been secured by the use of the fire brick tiles.

The tiles used in this style of ceiling are six by fifteen inches in size, and are laid on edge, so that the flat surface is exposed. They are set in cement mortar. The span between the columns is sometimes upwards of fifty feet, but so perfect is the arch that the compression is distributed uniformly and no part of the load is in danger of collapse.

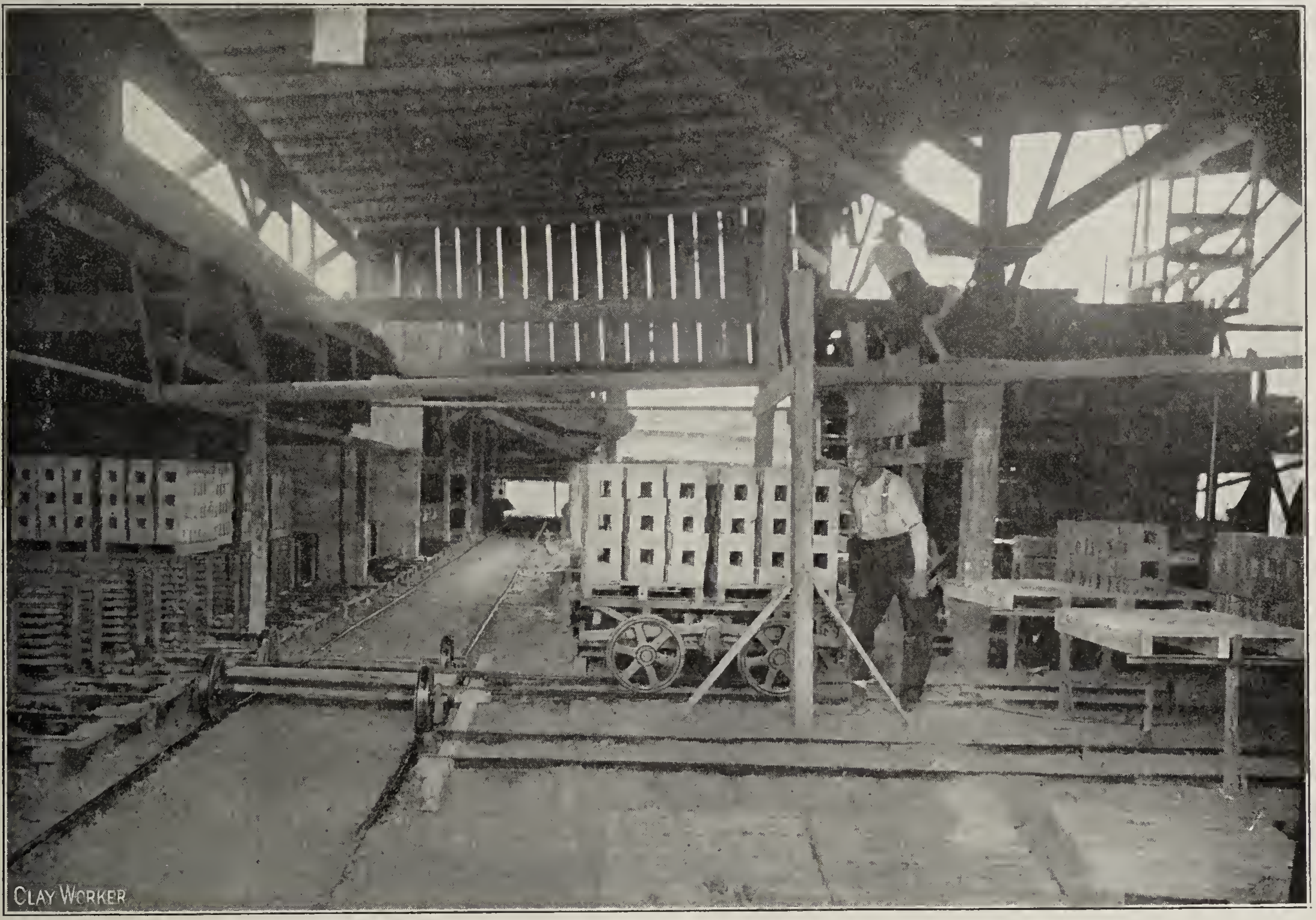
It is argued by those who construct such ceilings that they give the maximum of lighting space at a minimum of weight and cost. The protection afforded is also considered to be of the safest kind. In some of the Cleveland buildings, glazed and decorated tiles are used to face the fire brick and are found to be very ornamental. An interior fire could be confined to one floor with ceilings of this order, for it would be practically impossible for it to burn through such a ceiling.

BUCKEYE.

ONE OF NASHVILLE'S LEADING BRICK PLANTS.

Among the enterprising brick manufacturers of Nashville, Tenn., none are more progressive than the LeSueur Brothers, who have a well-equipped stiff mud brick plant of 40,000 daily capacity. The clay is brought from the clay bank near by in dump carts and fed into a Brewer-Sword machine, which molds the brick and automatically delivers them on an off-bearing belt, from which three boys hack them on pallets supported by pallet rests attached to turn tables. When the pallets are loaded with 420 green brick they are turned into position and taken to the drying sheds by means of a No. 8 Drymore truck, and when the brick are dry, which is in about forty-eight hours, in the steam dryer, and six to ten days in the open air sheds, the pallets of brick are taken to the kiln on another No. 3 Drymore truck and delivered to the setter.

The brick are not handled individually from the time of leaving the machine, and the day's output of 40,000 brick is handled through the drying process and delivered to the setters by two men. This is certainly economizing in labor. The accompanying illustration will give the reader an idea of the way the brick are handled. It will be noted that the pallets of brick are placed over steam coils. These are put up in eight pipe manifolds extending through each track. Both live and exhaust steam is used. Other views of the Drymore truck are shown on page 91 of this issue.



Taking Green Brick from Machine to Dryer on A "Drymore" Truck at the Plant of the LeSueur Brothers.

The LeSueur Brothers are contractors as well as brick makers and own an extensive body of fine river bottom clay on the opposite side of the city from which their present plant is situated, so they will likely continue in the business for many years to come. However, the clay bed from which they have been taking their raw material for many years past is by no means exhausted. They are much pleased with the Drymore system and contemplate other extensive improvements, such as the building of new down draft kilns, etc.

Written for The Clay-Worker.

NEW YORK AND THE EAST.

SO FAR NOTHING has occurred to injure the dream of the New York and New Jersey brick manufacturers, that this season was to be the best in years. The incipient strike which threatened to cause difficulty along the Hudson was adjusted and no further complaint has been heard. Aside from that slight disturbance there has been nothing at all that indicated any labor troubles. The men have been too busy since the season opened to think much about labor troubles or agitation. Every man is required to keep the yards running to the fullest capacity and the result is that business is on the boom. It seems like a lasting boom, though there has been considerable falling off in the number of structures projected during the past month. New dwellings are not being planned as liberally as they have for the past two or three years, but there seems to be no cessation in the number of permits taken out for business structures. The outlook along this line is quite as good as it has been for three or four years. There promises to be extensive buildings of this character for many years to come.

About New York and the territory tributary to it business is in prosperous condition and building operations and public works are being projected with a liberality which promises continuous growth for years to come. Practically every yard is filled with orders and it is difficult to obtain brick on time as wanted. Eerything is sold in advance of burning and some yards have more orders than they can fill ahead now. It will take them sometime to catch up.

Active demand has kept prices at the high range which has prevailed for the entire season so far. Buyers have attempted, in numerous instances, to get prices down, but so far they have been unsuccessful and manufacturers are holding firmly to their schedule. With labor cost along the Hudson a little higher and with expenses quite as heavy in other directions, it has been necessary to keep prices up, or else lose money. This is what makers did for years and they are tired of it and refuse to be buncoed into any such business operations again.

Following are prices about New York:

Front, buffs, No. 1, \$32.00; grays, shaded and speckled, \$32.00; white, No. 1, \$30.00 to \$32.00; Hudson river, common, \$10.50 to \$11.00; light, hard, \$9.00 to \$.50; pale, \$8.00; No. 1 fire, American, \$25.00; No. 2, \$20.00; Scotch, \$32.00.

These prices are being paid by buyers for the varieties named and indicate that the business is prosperous, and that there is sufficient demand to keep up the present good conditions indefinitely. Manufacturers are not forcing the market, but they are accepting all offers that come and are, in some instances, looking for desirable contracts. Others are not, however, the work in hand being so heavy that they couldn't handle it if more were offered.

Along the Hudson there has been an active business ever since spring opened. At first it was difficult to obtain brick fast enough to satisfy the demand of buyers, but since the yards got to working there has been a better situation, and in most instances it has been possible to keep orders filled. Every sort of boat and barge that would float has been pressed into service for getting the brick down the river, and the piers where they are landed present a busy appearance. At some of them half a dozen schooners are unloading at the same time. The piers have been shifted some owing to the encroachment of the city's new piers upon the old ones, but in nearly all cases they are reasonably convenient to the principal building operations.

Along the Hackensack prosperity reigns supreme. Every yard is running full handed and sales are as liberal as the make. None are left after they are cool from the burning. The sale so far has been far more active than it was last season. Some yards have contracts ahead for all their product, while others are selling as it is made. But there is apparently no difference in disposing of the brick. They are both going as fast as they can be delivered. Some of the yards have been obliged to do some more stripping this season to increase their supplies of clay. The quantity exposed is much larger by reason of this, and business can be conducted for several seasons to come to better advantage because of it. The weather has been fairly good so far. Showers have been short and sharp, but no long, soaking rains have occurred, with one exception, to do much damage to the yards. The Hackensack yards are so near the ocean that they get all the rain there is, and it frequently causes a good deal of injury to the drying brick. Fortunately, this year has been nearly free from such losses and business has gone on without serious interruption.

Around Trenton, N. J., there is the busy hum of prosperity which indicates good business there. The manufacture of brick and pottery is one of the state's important industries and Trenton is its center. The potteries are running full time, with orders ahead of larger proportions than those already filled. Several new plants are projected and the prospects are quite as encouraging for the remainder of the season as they were at the opening. Burton.

A NEW GAS-FIRED TUNNEL KILN.

Something new in the kiln line is described in a circular letter received from W. B. Chapman, assistant manager of the Morgan Construction Company, 40 Exchange Place, New York City, which, if it proves practical, will work a great saving in the burning of building, paving and fire brick. The inventor's estimate is that it will save 50 to 80 per cent. of the fuel now used. The kiln consists of one tunnel within another, the inner tunnel being constructed upon cars, which moves upon tracks located in the floor of the outer tunnel. The inner tunnel is composed of a number of sections, each being located upon a car. The green brick, as they come from the press, are set on the cars which form the inner tunnel. The cars are then run into the outer tunnel, where they are, in succession, dried, burned and cooled. The heat is supplied by a gas producer located near the burning portion of the kiln. It is claimed that the temperature in the kiln can be easily regulated and there will be no difficulty in obtaining heat up to 2800 degrees Fahrenheit. The invention embodies a number of novel features. Those of our readers who are sufficiently interested can obtain full particulars, blue prints, etc., by addressing Mr. Chapman direct.

HOME FOR POTTERS.

The National Brotherhood of Operative Potters will build, equip and maintain a home for aged, worthy, indigent potters. This step was decided upon at a recent session of the organization, but the details were left to the executive board to work out after making investigation. The board will report to the convention in 1908 and will decide upon the best location, which will be either in Ohio or West Virginia. The movement for the home started in Trenton.

TRUTH AND POETRY.

Reading the ad of Miss Phoebe in white
And her trip on the road of the Anthracite,
Reminds us of railroad trains
That are operated by careful brains.
Thousands of freight cars looking bright
And pleasing to everybody's sight,
But those unsightly cars that "aint"
You'll know don't use "Ricketson's" paint.

The C., M. & St. P. Ry. Co. is painting 3,000 freight cars —our paint. Ricketson Mineral Paint Works,
Milwaukee, Wis.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

English Brick Dryer in Greece.

Editor THE CLAY-WORKER:

We are extremely busy designing and installing drying plants of all kinds and are doing a fair business with the brickmakers. We had had rather an interesting job close to Athens, Greece, drying tiles. We shipped a plant there some time ago, and where it formerly took them twenty-eight days to dry their tile on shed floor with steam heat, and their waste brick averaged 40 per cent., they are now drying in our tunnel dryer in one hundred hours, and the waste brick averages 1 to 2 per cent. This, we think, is a good record.

SUTCLIFFE VENTILATING & DRYING CO.

Manchester, England.

Wants to Know How to Construct Dryer Floor.

Editor THE CLAY-WORKER:

We have under consideration the erection of a dryer for the manufacture of hand-made fire brick for furnace linings. We propose to use the waste steam from our engines, passing it through 3-inch sewer pipe, placed close together, the drying floor to be made by covering these pipes with some suitable material having absorbent quality, rolled and packed smooth and hard enough to stand a reasonable wear under wheelbarrows.

Will you kindly put us in the way of obtaining specific information as to the best material and method for putting in such a drying floor? Yours truly,

THE COL. CO.

A Hand or a Machine Yard, Which?

Editor THE CLAY-WORKER:

I have been taking THE CLAY-WORKER for the past few months in view of starting a brick yard. I want to burn two or three hundred thousand a year. Think I could sell that number to the home market easily. What I want to ask you is this: I have two kinds of clay; one is a heavy stiff clay, that makes a very good soft mud common building brick, but is a little hard to dry. The other is what we call a "made dirt," that is, it is the settlings from a branch stream, and makes a good sand molded brick by the hand process. What I would like to know is, in your opinion would it be better for me to buy a power machine to make them, or mold them by hand? Most of the brick made within fifty miles of here are molded by hand and an old blind horse. Would thank you for your opinion. A. B. CRAIG.

————, Mo., June 15, 1906.

A Wet Season in Maine.

Editor THE CLAY-WORKER:

The brickmaking season up to this date is the worst that has been experienced in New England for the past thirty years. Ever since the first day of May there has been scarcely a day but rain has fallen, and the days that it did not rain were "muggy," except now and then a day when there would be a drizzle. In spite of this fact the brickmakers have dodged between the showers and have got together a few small kilns of brick.

Hugh O'Brien, the veteran brickmaker, who has led the procession in this section as regards improvement, has sold out his plant, machinery and all, for something like $30,000. Mr. O'Brien does not intend to enter the brick business again, the new firm being composed of Elmer Littlefield of Brewer, Frank Brooks of Orrington, and several other capitalists.

William Burke, of Brewer, is burning a twelve arched kiln, about 200,000. The Bangor Brick Company is burning about 250,000 at the present time, and William Burke, Jr., of Brewer, is burning a 200,000 brick kiln.

These bricks are all sold, as well as all that can be made at this season, under the present order of things. Mr. Burke contemplates placing in new machinery, and has some idea of adopting the new pallet system.

The new company which has taken the O'Brien brickyard, of which Elmer Littlefield is the head, will no doubt enlarge the plant and attempt to keep pace with the times in supplying bricks for the local market. It is a peculiar fact that this year at Houlton, Me., bricks are being used within one-half mile of four deserted brickyards, with as good clay as there is on earth, which have come from St. Andrews, N. B., upon which a duty of $3.00 per thousand has been paid. P. D.

Bangor, June 25.

Brick Business Good in North Dakota.

Editor THE CLAY-WORKER:

We are pleased to say that the business in the brick line this season, for this part of the country, is the best it has been for years, and brickmakers are anticipating the best year they have ever had. We started our yards early this season and had new brick on the market by June 10. We had about 2,000,000 old brick on hand to start with, which was quite sufficient to take care of our orders until the new brick were ready for delivery. We are installing down draft kilns at our Alsip yard, and will be taking brick out of them by the middle of June.

RED RIVER VALLEY BRICK CORPORATION.

Grand Forks, N. D.

Speed and Capacity of Brick Cutting Machinery.

Editor THE CLAY-WORKER:

Referring to Mr. Bensing's article in April CLAY-WORKER, which escaped my attention until recently, will say that while I do not care to get into any disagreeable controversy with the gentleman in question, I feel that an answer is due, backed up by facts which can be proven and are accepted by well-posted brickmakers.

To the best of my knowledge, the world's record on a single machine is held by the Illinois Brick Company, at yard 22, Blue Island. The actual number of brick made was 223,000 in eight hours; this is an average speed of 494 brick per minute. This, of course, may have been passed slightly at various times during the day, and probably at times was a little less. For convenience in my article, I took 500 per minute as the present limit of speed. This seems to have been high enough to arouse the gentleman's incredulity.

This run was made on a Chambers cutter, which is similar to Bensing's (in that the wires are on a reel supported above the stream and the plane of revolution of this reel is parallel to the stream), but of much less complicated construction and with infinitely smaller number of wearing and moving parts. As the brick were end cut, the enormous speed of 14½ miles in ten hours, at which Mr. Bensing throws up his hands, becomes over 28 miles in eight hours. Now, I'd like to see the woolly worm which he refers to move 28 miles in eight hours. The fact is, Mr. Bensing has never seen a cutting table cutting 500 per minute, while I have, and the trouble is that at this speed the momentum of the reel and a slight variance in speed of stream often carries the wire under the brick just cut, and flips it on top the brick ahead, or crosswise of belt, or off the belt entirely, causing trouble. This is difficult to overcome, as the reel must be sensitive to the motion of the stream when the speed is less and the momentum of little consequence. In Bensing's table this trouble would be worse, as his wire holders are not rigid, but swing forward and back within prescribed limits. The wear of moving parts would also be excessive at this rate of speed.

The amount of clay handled, however, is grossly exaggerated by Mr. Bensing's figures. While they may be correct in themselves, he has no ground on which to assume that I was talking about paving block. 3x4½x9 inches is an unusually large brick; for, allowing a 10 per cent. shrinkage, he would still have a brick 2.7x4x8.1. The brick in question measure, burned, 2¼x3¾x7¾; allowing same shrinkage, would be 2½x4.1x8.6 green. This size brick, green, weighs about six pounds. Five hundred per minute makes 90 tons per hour, or 720 tons in eight hours. Now, Mr. Bensing, in undertaking to ridicule the handling of 1,200 tons of material in ten hours, merely displays his ignorance of conditions which already exist. For at this same plant they are handling 1,200 tons of material in eight hours instead of ten, digging it with a single steam shovel and hauling it over a single track by one hoist drum, two cars at a time, and dumping it in two places, for owing to the limitations of the cutting table it is necessary to put this clay through two machines. The number of brick produced, however, is 400,000. The thing for Mr. Bensing is to bring his cutting table out of the Kansas field, where it is wasting its energies cutting from 60,000 to 100,000 in ten hours, and put it to work where its capabilities would be demonstrated in short order. In the meantime, let him come to Chicago and I will take pleasure in trying to gain him permission to visit a real brickyard, where he can satisfy himself that my paper before the National Association was not entirely hot air, as he intimates.

MARION W. BLAIR.

Written for THE CLAY-WORKER.

WITH THE ST. LOUIS BRICKMAKERS.

BUSINESS HAS BEEN unusually lively with the brick manufacturers, if that can be more possible than it has been all this summer, since the ending of the strike a week ago. Previous to that time and while the strike was on, they had about all they could attend to, but since the strike ended they are very busy. The prospects are bright for the present conditions to continue indefinitely, unless some more trouble arises.

According to the monthly report of the building commissioner, more building is being done just now in St. Louis than during the same period last year. In June, 1905, there were 195 permits issued for brick buildings, the estimated cost of which was $1,927,192, while this year there were 223 permits issued for buildings, which will cost $2,698,410.

Frame buildings are still popular, according to last month's report. There were 364 permits issued for buildings, which are estimated to cost $105,604, while in June, 1905, there were 293 permits taken out for buildings on which the cost was placed at $77,059.

During the month just closed permits were issued for alterations to the value of $206,654, while in June, 1905, the estimated cost of such work was $158,897.

During the last month the aggregate value of the buildings contemplated in the permits issued was $3,010,668, while in 1905 the total cost of buildings for which permits were issued was $2,163,148.

The record of the building commissioner's office was broken on July 2, when fifty-five applications were made for permits. Of that number thirty-two were for frame and twenty-three were for brick buildings. The total cost of the proposed buildings is estimated at $107,667.

Work on hundreds of buildings which have been at a standstill because of a strike of workmen belonging to the building trades council was resumed about the first of July. It is estimated that the completion of the large structures in progress of construction in the business district of the city alone has been delayed from two to three months, at a loss of thousands of dollars in rentals to the building syndicates. Only two big buildings were not affected by the strike. The strike was the result of a fight between the building trades council and the international bricklayers' union, the council refusing to allow men to work on buildings on which bricklayers are employed. The carpenters affiliated with the council would not work on buildings on which independent carpenters were employed.

The controversy between the independent carpenters' union and the carpenters' district council, which now is practically the only disturbing element in the St. Louis labor situation, may be settled by the appointment of a joint committee to form a working agreement.

Three St. Louis architects—Messrs. W. B. Ittner, commissioner of public school buildings; William S. Eames, of Eames & Young, and R. J. Russell, of Mauren, Russell & Garden—left a few days ago for Europe to attend the seventh international congress of architects, which will meet at London on July 16. The party went to Paris, where Mr. Ittner will join his wife and children, who are spending the summer in Europe. They will then go to Berlin, after which they will return to London to attend the convention.

A general strike has been on at the plants of the Belleville Brick Company, Kloess brick yards and the Standard Brick Company, which affected 150 men. The cause of the strike was the refusal of the operators to grant the men an average increase in wages of eighteen cents a day. There are several grades of workmen, and their wages range from $1.75 to $3.25 a day. The lowest increase demanded by the men, all of whom are affiliated with the bricklayers' union, is ten cents a day for laborers, and the highest twenty-five cents a day. The owners of the plants have agreed to pay the laborers the increase demanded, and have offered an average increase to all of their men of about twelve cents a day.

Will Scott, of the Scott Manufacturing Company, reports a satisfactory summer business. Inquiries are plentiful and orders are above the average in number. The "Press that Scott builds" continues to be as popular as does the head of the company, and the various brick manufacturers are gradually falling in line to use it. The results obtained from the use of the press are particularly gratifying to the purchasers.

Business continues to come to the Williams Patent Crusher and Pulverizer Company. The fact that their crusher gives the very best results is being demonstrated by all the users of it.

The business that is being done by the Anthony Ittner Brick Company, in spite of the strike, is highly pleasing to Mr. Ittner. The company has had all the business it could attend to, even with the strike on.

Mr. Grath, of the Illinois Supply and Construction Company, says that business is excellent, and that the Grath brick presses and kilns are becoming more popular each year.

A. SAINT.

REINFORCED BRICK WORK.

IT MAY not be possible for San Francisco to build as extensively as it should do of reinforced concrete, for unfortunately there are too few builders familiar with its uses, but there is one closely allied method that its builders should know. I refer to reinforced brick work. Broken stone for ordinary concrete may be difficult for them to obtain, but the bricks are there on the spot, and the steel wire or plain steel rods can be quickly gotten. No expensive lumber false work is necessary, and by the addition of the steel an eight-inch wall will be better and stronger than the plain brick work of twice that thickness, and for curtain walls a four-inch wall would be better in many instances than one of eight inches.

It is evident that the city could save millions of dollars and months of time by building intelligently with the materials at hand, providing it can break away from obsolete methods and the unyielding building laws founded on those methods.

Major Stokes Roberts, of the Royal Engineers, has put up some remarkable examples of water tanks in reinforced brickwork for the British government. He uses light brick walls with telegraph wire reinforcement to stand the thrust of tons of water. He makes a nine-inch reinforced wall do what no plain twenty-inch wall could do with safety without the steel, and he suggests the use of still lighter masonry. It is the principle of the wire-wound gun applied to brick work. The walls are laid up in cement mortar like any ordinary wall, excepting that wire ties are left projecting from the joints, and to these are bent light rods or wires along the surface of the brickwork.

Over this steel network a coat of cement mortar is placed, and the result is practically a reinforced concrete wall. Such a wall could be bulged or twisted by explosion or earthquake, but it could not collapse. It is knitted together and to the floors and columns with steel stitches that will not rip, and the most important of all, just now this work can be done by the ordinary mechanic employed by any careful builder. Like a sailor's knot this wirework is easily done, but hard to describe. The result is a wall that will defy fire, water, earthquake, and the tooth of time.—Robert W. Gardner, in The Architect and Engineer of California.

Written for The Clay-Worker.

KANSAS CITY BRICK AND BUILDING NEWS.

LAST MONTH made an exceptionally good showing in the way of building permits in this city, the increase over the corresponding month of last year being about a half million dollars. The total value of permits issued in June was $1,453,140, as compared with $1,021,940 in June of last year. The value of the brick buildings last month was $878,300.

There is a big demand for brick, in fact, a larger demand than can be supplied, and the demand would be larger than it is now if it was not for the fact that there is trouble between the stonemasons' union and the bricklayers' union. This trouble is making contractors a little afraid of taking hold of work, as the fight between the unions is likely to tie up the job at any time. It seems the most of the stonemasons, especially of the better ones, belong to a union which is not affiliated with the bricklayers, and that there is a small stone masons' union which is affiliated with the bricklayers. Now the bricklayers want to force the big union into the smaller one, so they will all be affiliated. With this trouble on, which would ordinarily greatly paralyze building operations, there is a very heavy demand for brick, and brick yards are really glad that the trouble is here, for it allows them to get a breath occasionally, when they would be flooded with business otherwise.

It is said that the Kansas brick yards are having a demand for their product which is taking it to other points, and that they really do not care to make any sales here. This is their dumping ground ordinarily, and they are not accustomed to getting as good prices here as in other sections of the country. This year they need no dumping ground, and as a result the local plants are having a very heavy demand, and are selling the brick faster than they can produce it.

The fact is becoming more apparent each day, to the old brick men, that it is a safe investment to put in a number of good brick plants in this part of the country, either near Kansas City or in the Kansas gas belt, for modern plants, well located, would be able to work at a profit when the old plants could not, and from present indications there is going to be a demand to keep all the plants busy for a considerable period.

According to the report of the assessor of Kansas City, Kas., there were 1,465 new houses built there this year, in the city proper, not counting outside additions, the total value of which was $1,240,000. More than 1,000 of these were cottages, the balance being brick business and residence buildings. He states that this is an increase of nearly fifty per cent. over last year.

The people of Kansas City, Kas., are beginning to wonder how they will be able to get any more of their streets paved, or any of their paved streets repaired. Contractors are not caring for paving contracts under the tax bill law now in force, and they refuse to make bids for the work. The cost of paving is now assessed against the property and the tax bills given to the contractor. He can keep them until due, or discount them. Should the property owner be dissatisfied, he is privileged to sue, and thus drag out the time of payment indefinitely, and also cause the contractor much expense. Under the old system the city issued bonds, and they meant cash, so the paving was contracted for without delay, and the contractors worked hard for the business.

Common brick are commanding from $7.50 to $8.00, delivered on the job, here in Kansas City, or an advance of fully a dollar since last winter, and they are hard to get. Vitrified brick have also made a very nice advance, and in fact all kind of brick have seen an advance this year, with the single exception of dry pressed brick. The price remains stationary on dry pressed brick, and there is but light demand. It seems that the vitrified brick is going to replace the dry pressed brick for building purposes in this trade territory. Brick houses, both residences and business blocks, are now demanding something durable and beautiful, and the many faces to be found on the vitrified brick of today seems to make it just fill the bill, and the fact that the house can be washed with the garden hose, instead of having to be painted year after year, is an argument which soon clinches the order for the vitrified man. It is pretty near safe to say that what demand there has been for dry pressed brick this year was created by the scarcity of good vitrified brick.

The Kaw brick yard, of the Kansas City Hydraulic Pressed Brick Company, located across the line in Kansas City, Kas., has been equipped with gas burners for the purpose of burning the brick, and the first kiln is reported to have been a success in every way.

The Pittsburg Brick Company is reporting the receipt of a contract for about 1,600,000 of their paving brick for Olathe, Kas., where they had laid some brick several years ago, side by side with some other brick on the same street, where they had identically the same wear. The people of that city were so well satisfied with the test they had made that they wanted nothing but the Pittsburg brick. They also have an order from Galena, Kas., for about 1,000,000 of their noiseless paving blocks. The plant at Pittsburg, Kas., which produces their paving brick, is said to be loaded down with orders, and is apparently only about half large enough to take care of the demand.

Fort Smith, Ark., is coming to the front with the kind of a proposition that will make the brick manufacturers sit up and take notice. They have just issued bonds to pay for a very large amount of municipal improvements, and in notifying the world of the fact that they are in the market for something like 36,000,000 paving brick, 80,000 lineal feet of pipe sewer, 36,000 lineal feet of concrete sewer, etc., they proceed to state that contracts will be let with the understanding that if plants are to be built in that city for the production of the material, they will give the contractor time for construction of plant, etc., and will give such a bid preference over a bid for outside brick, pipe and concrete work They call attention to the fine shale beds right by the city, and also to the desirable location for a concrete industry, and evidently mean to make their municipal improvements bring them some manufacturing plants which will be of value to the city. Fort Smith is exceptionally well located for a brick plant to make paving brick for the Southern trade, if the shale is of the right quality. The South has been doing most of the paving of late, and there is every reason to expect an exceptionally heavy business from the Indian Territory towns as soon as they get statehood, and are in position to pave their streets. These towns will put in a great many blocks of paved streets.

K. A. W.

SAND-LIME BRICK AT LAKETON.

Another Hoosier town that is coming to the front on sand-lime brick at Laketon, where the plant of the Laketon Sand-Lime Brick Company was built last year. This company reports orders on hand for all the brick they can turn out for some time to come, and states that they have yet to receive the first complaint as to the quality of their brick. In fact, they are seriously considering the addition of another press and cylinder, owing to the fact that they have difficulty in supplying the demand with their present equipment. The Elwood iron works has built their new machine shop from the sand-lime brick at Laketon, and say that it is considered the prettiest building ever erected in Elwood.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-THIRD YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
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☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

227-233 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

VOL. XLVI. JULY, 1906. No. 1.

CURRENT COMMENT.

A poor brick is not a bad one till it is put to a wrong use.

* * *

Man is about the only animal extant which can be skinned again and again and still thrive.

* * *

How much have you reduced your kiln waste, and how much per has it cost you?

* * *

A word of appreciation given along with the pay envelope does not increase its contents, but it does add to the pleasures of its recipient.

* * *

The postoffice expenses could be reduced a little by an editorial boiling down of the Congressional Record, and the said Record would also stand a better chance of being read.

* * *

An occasional can of beer may not hurt a good workman, but there are no instances on record where it has improved a kiln fire or added a cent to the pay envelope of the workman.

* * *

Knocking is well applied when it is directed at a stumbling block in the way of progress, or to the shaping of something to useful ends, but it should never be used as an implement of destruction with no other purpose in view than that of gratifying our own selfish desires.

* * *

Prof. W. D. Miller, of the University of Berlin, is accused of having said that the bite of a pretty girl may be as productive of poisonous germs as impure foods, and may bring a quicker and more horrible death than the bite of a serpent. Well, now, if the professor wants to make some experiments in the interest of science on this question, we will bet a dollar to a doughnut that we can get a dozen volunteers for the pretty girl bite here, to where he can get one volunteer for the snake bite over there.

* * *

If reports be true, John R. Copeland, the president of the N. B. M. A., can answer the query, "Why does lightning never strike twice in the same place?" For on the 14th inst., his plant at Pratt City, a suburb of Birmingham, Ala., was struck by lightning, and the fire which followed did damage to the extent of nearly $20,000. It was insured for $6,000. Probably the plant will be rebuilt at once.

* * *

The wave of reform that has been sweeping over the country and closing up the saloons on Sunday may be hurting the liquor trade a little, but it is sending more men to work on Monday morning with clear heads and more money in their pockets than usual, and incidentally it gives some promise of indirectly assisting and solving part of the labor problem, by reducing facilities for breeding dissension and strife.

* * *

Every once in a while some newspaper writer goes to the trouble of explaining in detail the fact that it generally makes a man poor to be president of this great country. Well, maybe it does; but what's the difference? There are lots of us who are so used to being poor without excuse that it would be a welcome change to have the presidency to blame it on, to say nothing of the salary "and found" that pertains during the period of presidency.

* * *

Our readers will do well to study carefully Mr. Fitzpatrick's able article in this issue, on "The Lessons of the San Francisco Disaster." When the situation is fully understood, it is quite clear that brick as a structural material has again proven of superior merit. There was poor brick work in 'Frisco, which gave way under the fierce stress of quake and fire, but this was not due to poor brick, but to cheap, careless or unskilful work in laying them. There was good brick work in the wrecked city which withstood the shock of the quake and the fierce fire which followed with little or no damage. The lesson, as Architect Fitzpatrick clearly shows, is the need of better construction. Brick and terra cotta are ample, if proper skill and care is used in building. Had 'Frisco had more good brick buildings, she would have fared much better and sustained much less loss.

THE FAILURE OF BITULITHIC PAVEMENTS.

The report of George R. Grimes, civil engineer, upon the failure of bitulithic on Chestnut street, in the city of St. Louis, which we printed in THE CLAY-WORKER, and which afterwards was printed in pamphlet form, has been denounced by the friends of bitulithic as false, incorrect and misleading. The report of the condition of the street, as published in the St. Louis Globe-Democrat, has also been denounced as false. The resolutions of the Real Estate Exchange, whose membership to a large extent have offices on Chestnut street (concerning the condition of the street after it was resurfaced), has been denounced as untrue. The government reports which Mr. Grimes used in his general report have been denounced as being untrue. The photographs picturing the bad bitulithic pavements at Shreveport, La., given in this issue, will doubtless be denounced in the same way. Nevertheless, the photographs are true representations of the conditions photographed, and the statements Mr. Grimes made are true. The strange thing about the whole matter is that any person should say that they are untrue. The truth of these things is so reasonable and consistent. How any one of any common sense would expect streets built of such stuff, and in such a manner, would be other than short lived, is a conundrum.

THE AMERICAN CERAMIC SOCIETY'S MID-SUMMER MEETING.

The announcement of the Seventh Annual Mid-summer meeting of the American Ceramic Society, to be held at Beaver Falls, Pa., is given in full on another page. Those who have enjoyed the previous summer meetings will look forward to this year's gathering in anticipation of a most pleasant three days' outing, for they will not only renew old acquaintances, but will have an opportunity of visiting a number of fine plants in and about Beaver Falls, New Brighton and East Liverpool. These summer meetings, while strictly social affairs, offer the members a chance of reunion and an opportunity for "button-holing," under conditions favorable for practical comparisons of actual work. The itinerary of the session this year, as set forth in the announcement, is sufficient to convince the reader that a pleasant outing is in store for the members of the Ceramic Society.

APPRAISERS DECIDE ON FIRE BRICK.

The Government Board of General Appraisers in New York is having no end of difficulty trying to establish the status of fire bricks intended for linings for retorts, under the Dingley tariff law. Several times decisions have been rendered, only to be modified when the matter came up again. They do not seem able to establish a precedent which will cover all cases. Each protest has to be decided upon its merits, and frequently there is a wide difference in decisions. A recent decision attempts to settle the question for fire bricks intended as linings for retorts. The specific case was on goods imported in the name of F. Behrend, of New York. The importation was invoiced as retort settings, but the appraiser returned the article as a mineral substance, with duty at 35 per cent. ad valorem.

This classification was opposed by the importer, who maintained that the merchandise should be allowed to enter under the provision of the tariff for fire brick, with duty at the rate of $1.25 per ton. General Appraiser McClelland, who wrote the decision, sustains the contention of the importer, and says that the federal courts have decided previous cases of this character favorable to the importer. But the appraiser adds that had this case come to the board as an original proposition, the board would have felt obliged to have assessed the 35 per cent. duty. One very good way to avoid these troubles is to purchase American-made fire brick. Those made right here at home are just as good as those made abroad.

A BRICK CHIMNEY OBJECT LESSON.

While the writer was visiting a brickyard, recently, the proprietor called attention to a new brick chimney they had built to take the place of their old smokestack. He said they were led, or really driven into building it, by their old iron stack becoming worn out and full of holes, but since erecting it he had found it such a paying investment that he is sorry he did not do it sooner. He said he was simply astonished at the saving it effected in fuel. He claimed that it actually reduced their fuel consumption 25 per cent. in the steam boiler. It is probable that this is an extreme case. The delapidated condition of the steam iron smokestack probably furnished a better illustration of the economy of a good brick chimney than would obtain in plants where the iron smokestacks were in normal condition. Still, the difference is so wide, and the saving so great, that it furnishes a pretty strong argument in favor of the brick man giving more attention to brick smokestacks for fuel economy. Nor is that all. It suggests an opportunity for enlarging the field of brick consumption by preaching the doctrine of brick smokestacks instead of iron. If it will save fuel for a brick man, it will save fuel for any man operating a steam plant, and when a thing gives promise of saving fuel, it is not much trouble to get attention for it in the industrial world. This smokestack idea is one that the cement people have promoted industriously, but the brick men, as a rule, appear to have said very little about it with a view to enlarging the market for their product. There are lots of brick chimneys, of course, but how many of these have been inspired by the brickmakers themselves? Probably not many, the brickmakers contenting themselves with the supplying of brick after the idea of building a brick chimney has made itself manifest through other sources. The brick chimney business is not a big thing itself in any community, but every little bit helps, and with the object lesson given by the brickmaker himself in his own experience for a working basis, the brick manufacturers should be able, by proper effort, to encourage the building of more brick smokestacks than would otherwise be built, and to this extent enlarge the market for brick. It all helps, and things of this kind should never be neglected, but kept in mind and made use of when the opportunity presents itself.

A BIG DAY'S RUN.

That is an interesting letter from Fiske & Co., on the front cover page of this issue. Eighty-one thousand side-cut brick is indeed a big day's run, when the character of the clay is considered. The brick were made at the famous Fiske plant, at Dover Point, N. H., where the clay is very difficult to work. Those who understand the situation there will better appreciate the force of Mr. Pinkham's statement that the Chambers machinery "stays put." Much more might be said in this connection, and those of our readers who desire further information are requested to address Messrs. Chambers Bros. Co., Fifty-second street, below Lancaster avenue, Philadelphia, Pa., or their Chicago agency, 59 West Jackson boulevard, in charge of Mr. E. R. Frazier. The latter will smile at the idea of 81,000 being a big day's run, for in Chicago they make nearly three times that many brick on a single Chambers machine, but that is with Chicago clay—a very different proposition. Probably more brick are made per day per machine in the Chicago district than anywhere else in the world. As related in Mr. Blair's letter, on page 51 of this issue, brick are made there at the rate of 500 per minute, or, in the instance related, 223,000 in a day of eight hours. If any reader of The Clay-Worker knows of any instance where this record is equaled, we will be glad to chronicle the event.

SOUTH AMERICAN TRADE STATISTICS.

A Government report on the trade of the United States with South American countries points out that, outside of Argentina and Brazil, our trade there is not large, nothing like it really should be. Of our imports from South America last year, totaling 150 million dollars in value, 115 millions of this was from Brazil and Argentina. Taking the countries in the southern part of the South American continent, countries importing about 400 million dollars' worth of merchandise a year, and they only get 12 per cent. of this from the United States. This makes it sound like, whether we need the canal or not, we certainly do need some awakening on commercial possibilities south of us.

The Ernst Wiener Company, 66-68 Broad street, New York, manufacturers of industrial track, cars and equipment, has opened a branch office in the Gazette building, Pittsburg, Pa., which will be in charge of Mr. Paul Muller.

TOMMY THE OPTIMIST.

Pa he's complainin' every day because the prices are so high
And there's so many bills to pay and so much graftin' on the sly;
You'd think the way he talks that there was no use livin' any more
Unless you was a millionaire—gee, but he's sour-faced and sore!
I don't see why he feels so bad; I can't see nothin' wrong at all;
I want to yell, I feel so glad! School's out till fall.

Ma she has lots of troubles, too; we haven't any girl, you know;
The last one stayed a week and flew the coop because pa licked her beau;
Ma never has a smilin' face, and, somehow, she appears to feel
That it's a horrible disgrace for her to have to get a meal;
She scolds and frets and hides away when any of the neighbors call;
I don't see why she can't be gay. School's out till fall.

Belle's had a quarrel with the chap that used to come here every night;
You'd think she didn't care a rap for anything that's left in sight;
She says the world's a dreary hole, her eyes are swelled and kind of red;
She couldn't laugh to save her soul and claims she wishes she was dead;
I can't see why she doesn't sing nor smile no more—what ails them all?
There's nothin' wrong with anything. School's out till fall.

—Exchange.

Written for THE CLAY-WORKER.

HIS NAME'S WRITTEN THERE.

It pays to be a bricklayer for the Panama Canal. Charles E. Hilligoss, 1406 Oliver avenue, Indianapolis, has been appointed a bricklayer and his salary fixed at $1,800 a year, besides free transportation and free quarters on the isthmus.—Current Item.

The man who built great Babel's tower
On old Assyria's soil—
The records one may vainly scour
To find this son of toil.

And he who built the Parthenon
With trowel, rule and plumb:
Ask for the name of Labor's son,
And fame, alas, is dumb.

Behold the towering Pyramid,
And wonder who was he,
Who, meeting mighty Cheops' bid,
Built for eternity.

Ah, luckier is the mortal who
At Panama will build:
For fame his name will still pursue,
And honor it will gild,

For on the mighty Isthmian scroll
The artist will emboss
An honest, fearless Hoosier soul,
Just—Charley Hilligoss!

—Charles Dennis.

Written for THE CLAY-WORKER.

HIS TREASURES.

I like to sit and look at all my stocks and bonds and shares,
And think of how I almost joined the multimillionaires.
Here are six million dollars' worth of stock certificates
In Jiggsby's Giant Company for Propagating Dates.
The stock is lithographed so fine; the dividends are due;
And I'd be clipping coupons, but
The floor
fell
through!

'Way up there in the attic is a heap of ancient bonds—
The Guarantee Subscription for the Suckers Own Fishponds;
And tumbled round about them is about a million's worth
Of shares in Some One's Scheme to Make Pure Diamonds from the Earth.
They cost me almost nothing, and it makes me rather blue
To think I would be wealthy, but
The floor
fell
through!

Oh, yes, and here's my special lot of Superheated Air;
My line of Salted Copper, too, is stacked up over there.
Why, underneath the carpetings and all about the place
Is Kansas Coffee—common—just ten million on its face.
They gave me first chance at it—'twas a splendid thing to do,
And I'd be wearing sparklers, but
The floor
fell
through!

I've got a lot of other stock—there's Sagebrush Tea, preferred;
And Mountain Air Condenser (now, that agent was a bird!)
And Summer Snow Supplies, also Ocean Water Cold—
I had some Endless Motion, but that, by jinks, I sold!
I get my good twelve weekly, but I want to say to you
I'd have them all going, but
The floor
fell
through!

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HAVE YOU SEEN our latest publication—Part V of our general catalog of Testing and Controlling Apparatus? A copy for the asking.

The Richardson-Lovejoy Engineering Co.
(See page 90.)

WANTED, FOR SALE, ETC.

WANTED—Seven first-class foremen on sewer water, asphalt and brick paving. Must understand handling negro labor. Apply, with reference. SOUTHERN CONTRACTING CO.,
7 1 d Norfolk, Va.

WANTED.

Position as manager or superintendent of a stiff mud vitrified brick plant by party of experience. Can furnish the best of references. Western position preferred. Address
PENNA,
7 1 d Care Clay-Worker.

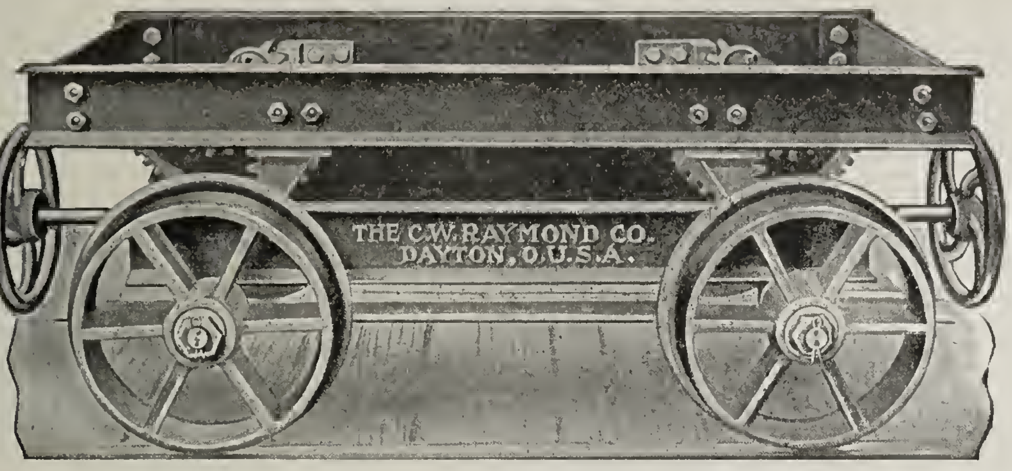
FOR SALE.

One No. 7 Chambers brick machine.
One automatic end cutter with edger.
Necessary shafting and belting.
All in good condition and used about one season.
Two outfits of extra-heavy piping and connections for Standard dry kiln brick dryers for capacity 50,000 per day.
170 iron dry kiln cars with wooden decks.
All in good shape. Address
THE SHREVEPORT BRICK CO., LTD.,
6 1 d Shreveport, La.

For Sale, Wanted, Etc., Ads Continued on Pages 74-77.

The Raymond System of Open-Air Drying.

Much the Cheapest Drying System Known.


THE C.W. RAYMOND CO.
DAYTON, O.U.S.A.

The McKenzie Patent Elevating and Lowering Brick Car.

The McKenzie Patent Elevating Car is so constructed that it operates positively and without perceptible jar. It can be run in either direction or operated from either end. The car is built a standard 24″ gauge, and can be adapted to existing methods. The car is built with a view to withstand the rigorous duty required of it. Entirely of iron and steel, and well proportioned. Exhibit 63 explains in detail.

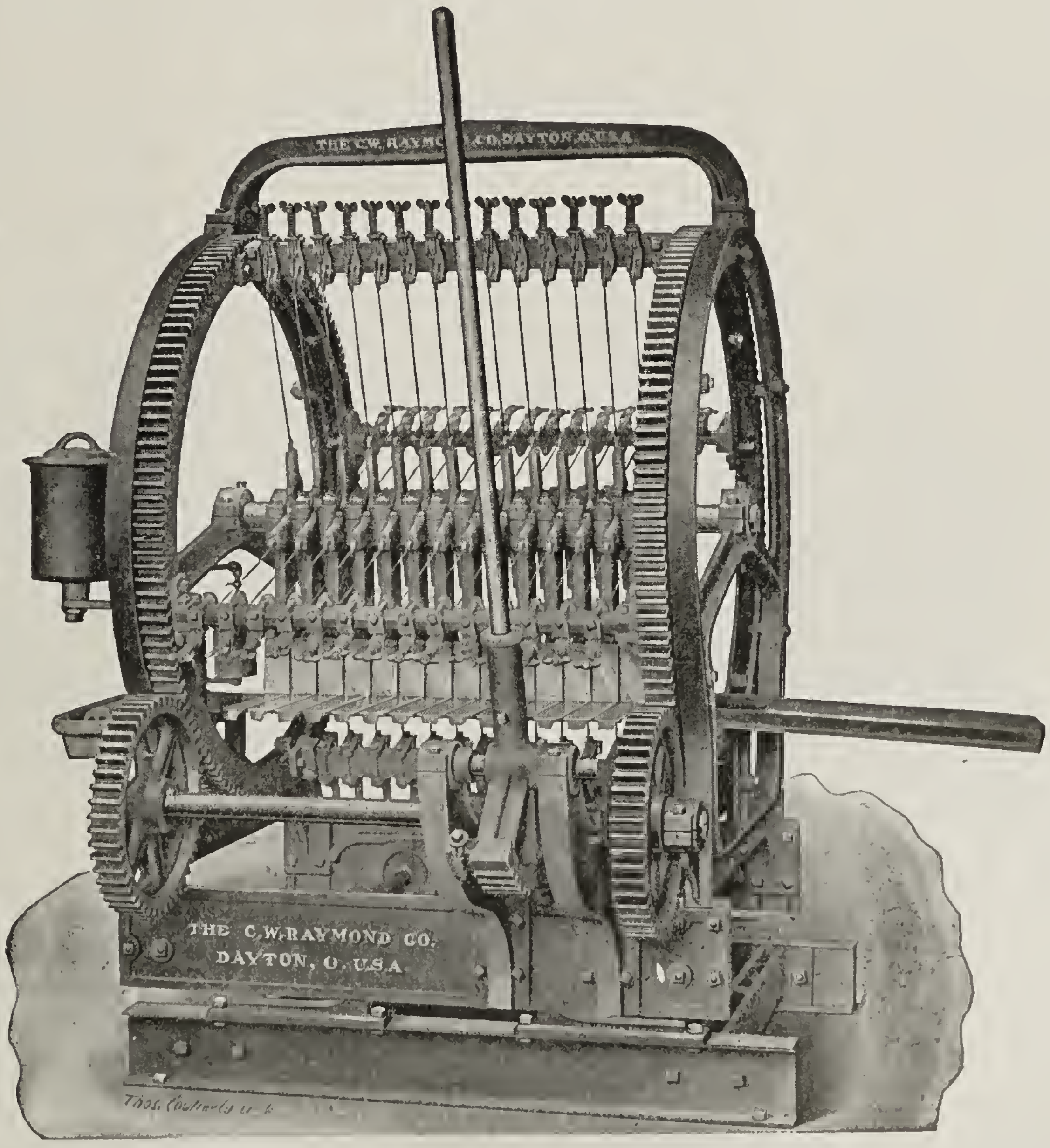
The C. W. RAYMOND COMPANY,

DAYTON, OHIO, U. S. A.

THE UNIVERSAL.

Fills the demand for cutting a high grade face brick. A shear down cut is given to the brick and all brick are cut positively true to line. The cutting wires are guided by the platten entirely through the column of clay. The rotary motion is in one direction, and the capacity limited only by the skill of the operator. The most practical cutter made.

We manufacture everything required for the brick plant.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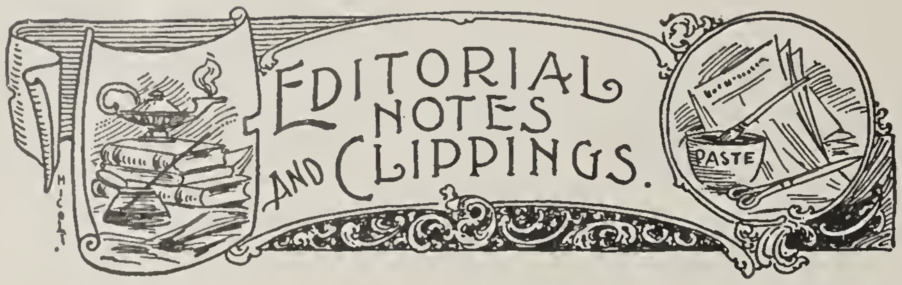

EDITORIAL NOTES AND CLIPPINGS.

T. Skjelbred will move his brick plant from Rice Lake, Wis., to Ladysmith, Wis.

T. R. Routen and Samuel Endicott contemplate the erection of a brickmaking plant at Tacoma, Wash.

J. M. Ireland will rebuild his brick plant at Las Vegas, N. M., which was partially burned some time since.

C. R. Kingsmore will build a brick plant at Sumter, S. C., and is in the market for brick machinery and other supplies.

The Hibberd Brick Company, Hibberd, Neb., is having an unusually busy season. A recent order calls for ten cars of brick to be shipped to North Platte, Neb.

Hansen P. Passmore, of Oxford, Pa., has purchased the brickyard property of Bransen Slack, south of that town, and will operate same the balance of the season.

Graybele & File have purchased the old Merrill brickyard at Des Moines, Iowa, and will spend $20,000 in improvements, increasing the capacity of the plant to 40,000 brick per day.

The plant of the Boulder Shale Brick Company, Boulder, Colo., was almost totally destroyed by fire recently, entailing a loss of $20,000, partly covered by insurance. The plant will be rebuilt.

The Hot Springs (Ark.) Brick Company has filed articles of incorporation, certifying to a capital stock of $20,000, all paid in. R. G. Looney, A. C. Brown, W. D. Brown, S. A. Burrow, John Cook and others are interested.

A certificate of incorporation has been filed for the Dillsburg (Pa.) Brick and Tile Company. The incorporators are D. W. Beitzel, John N. Logan, Dillsburg; R. B. Cook, H. R. Ritter, Harrisburg; D. G. Bowman, Allentown. Capital, $100,000.

The Pittsview Brick Company has been incorporated at Pittsview to manufacture brick at Pittsview, Ala. The incorporators are S. R. Pitts, Willis Thompson, F. P. Pitts, W. C. Williams, H. B. Pitts, W. H. Pitts, E. G. Henry, W. M. Burt and H. M. Rutherford.

The brick works at Salineville, Ohio, owned by H. A. Thompson & Co., has been purchased by John Starkey, of Miner, and Hutson Bros., of Pittsburg. The plant has been idle for some years and will now be overhauled and operated with a full force of men.

Ground has been broken for the construction of the immense plant of the Lehigh Clay Products Company, at Lehigh, Iowa. It is hoped to have the plant ready for operation by the first of November. They will manufacture building and paving brick, hollow block, drain tile and sewer pipe.

The Brown Clay Works, of Fort Salonga, Suffolk county, N. Y., has just been incorporated with the Secretary of State, to manufacture and sell bricks, fireproofing, building materials, etc. The capital stock is $35,000 and the directors for the first year are Juliet H. Brown, Henry C. Brown and J. Cornell Brown, of Brooklyn.

El Paso, Texas, according to the local papers, is facing a brick famine. More building is going on in El Paso than for a number of years, both business blocks and residences, and many who are desirous of building will have to wait until brick can be obtained. It is said that in some cases foundations are in and the work has had to stop because the contractors can not get brick.

The Sauk Center (Minn.) Brick and Tile Company has been incorporated with $50,000 capital stock. M. D. Hoff is president, P. Lowanthal vice-president, and P. W. McAllister secretary and treasurer. They have purchased the Pangburn brick yard and the adjoining property, consisting of about forty acres. They will greatly enlarge the facilities and output of the yard. In addition to the stiff mud bricks now already made there, they will make dry pressed brick, hollow brick, tiles and pottery.

A charter has been granted the Mebane Brick Company, Mebane, N. C., and a plant of 30,000 daily capacity will be erected at that place. T. A. Corbin, W. A. Murray and W. O. Warren are interested.

Fire of unknown origin destroyed the plant of the Findlay Brick and Tile Company, Findlay, Ohio, owned by D. E. Child. The loss is estimated at $9,000, on which there was no insurance. The plant will in all probability be rebuilt.

The plant of the Mohican Brick Company at Fort Edward, erected two years ago at the cost of $56,000, was sold yesterday by Dr. R. C. Paris, of Sandy Hill, to G. R. Shaw and Dr. Jarvis Barraclough, of Sandy Hill, who will start the plant immediately, making sand-lime brick.

The Collins and Wright Company will shortly start the construction of a new brick manufacturing plant at Butler and Fifty-first streets, Pittsburg, Pa. Architect Thomas H. Scott, Pittsburg, Pa., prepared the plans, and will take the bids this month. The new works will be modern in every particular, and will cost about $50,000.

Thomas Hampton, manager of the Pittsburg Kiln Construction Company, builders of Hampton's down draft kilns, writes that they are very busy, having a number of contracts to build the Hampton kiln in different parts of the country. They have a very attractive little booklet which they will be pleased to mail any reader of THE CLAY-WORKER sufficiently interested to ask for same.

A company is being organized in Waxahatchie, Texas, to establish a large plant on the Houston & Texas Central, two miles west of Midlothian. Lee Ingram, a contractor of that city and a member of the council, will be at the head of the enterprise. The plant proposed will have a daily capacity of forty thousand brick. It is said that blue shale in an inexhaustible supply has been found near Midlothian, and that it

[Continued on page 68.]

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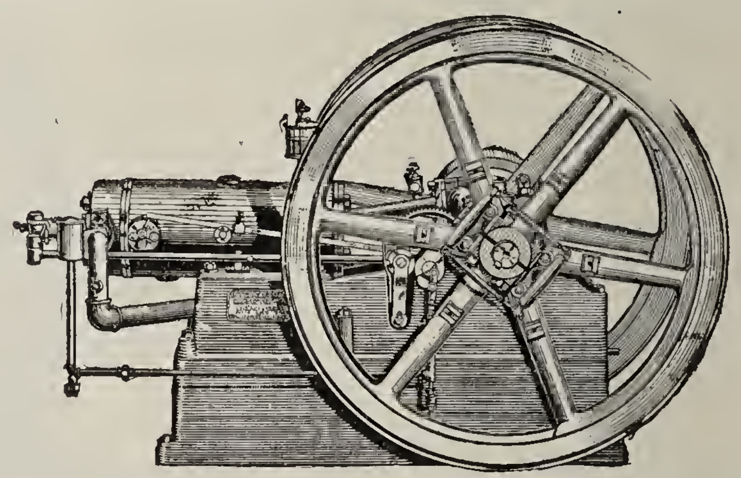

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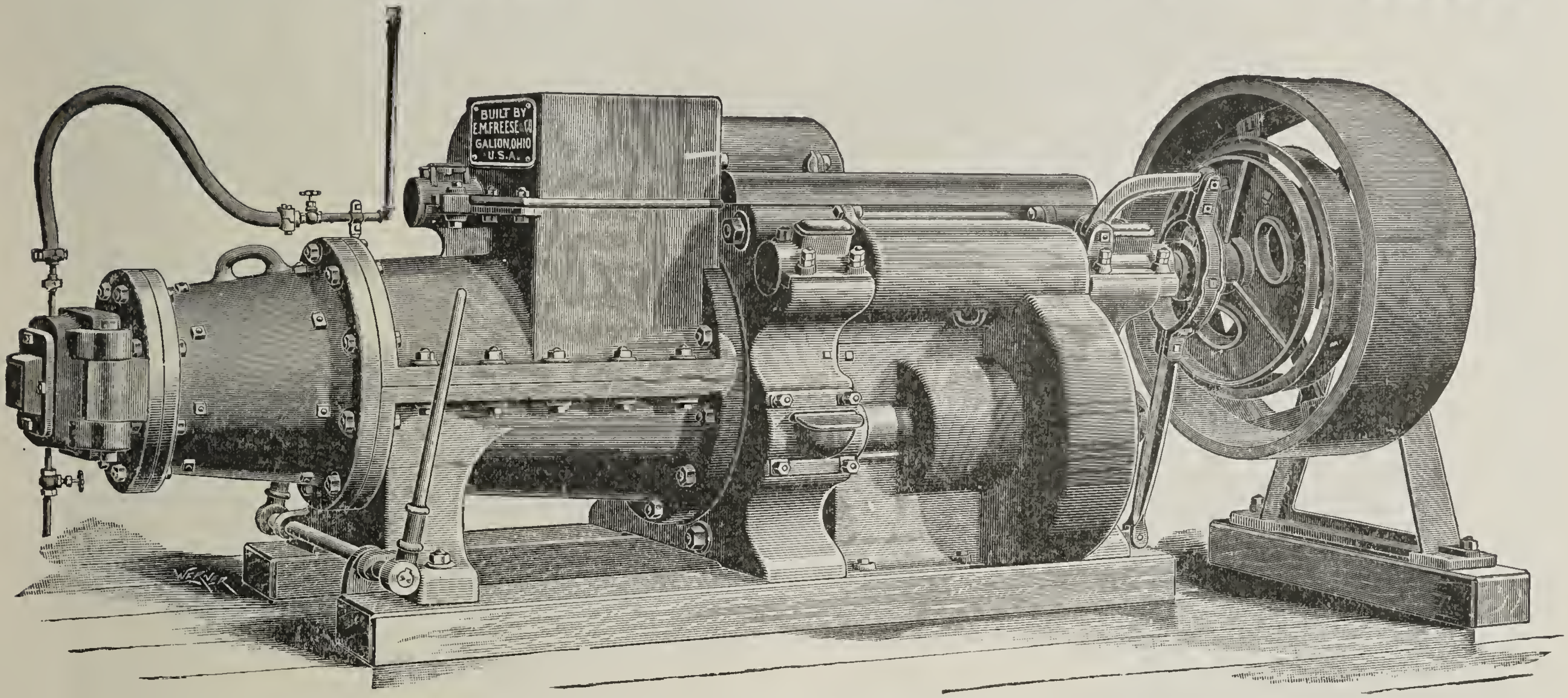
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THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

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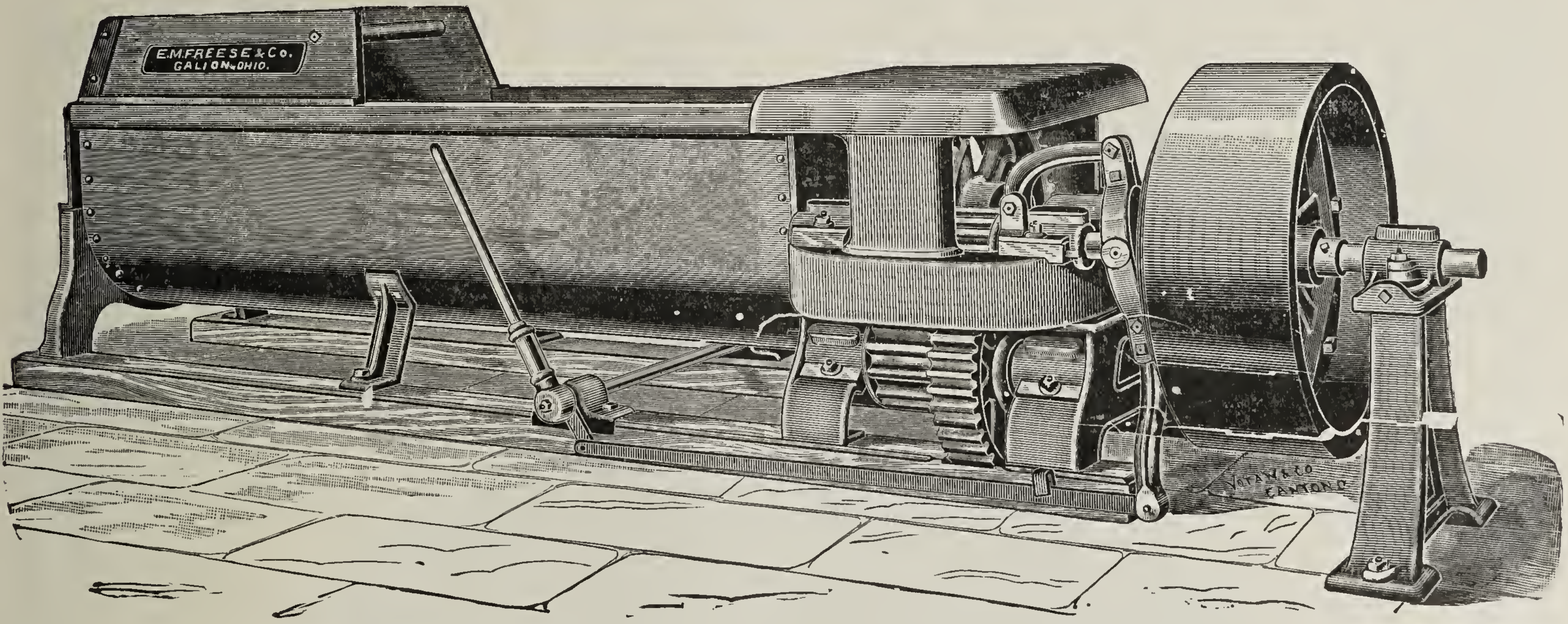
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THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitetd for making a fine quality of brick.

E. M. FREESE & CO., - - Galion, Ohio.

Mention The Clay-Worker.

See Ads on Pages 112 and 113.

EDITORIAL NOTES AND CLIPPINGS—Continued.

is admirably adapted for making brick. A test has been made which, it is claimed, was entirely satisfactory.

The plant of the Baton Rouge (La.) Brick Company was partly destroyed by fire, July 3, causing a loss of $20,000. The fire started from an overheated kiln.

The plant of the Courtney (Pa.) Fire Brick Company was damaged to the extent of $30,000 by fire July 4. The plant will at once be rebuilt to twice its former capacity. It is hoped to have it in working condition again by the middle of August.

A new concern to be known as the Winterset Brick, Tile and Material Company has been organized at Winterset, Ia., with $10,000 capital stock, by S. D. Alexander, W. L. Smalley and W. C. Sumner.

The Briercreek (N. C.) Brick Company has been recently chartered with a capital stock of $100,000. A 30,000 daily capacity plant is now in operation, turning out a good grade of brick. W. S. Pharr is at the head of the company.

John Rudenski and Carl Blaschki, practical brick manufacturers, have started a small plant at Foley, Minn. They will operate on a small scale at the outset, but expect to enlarge the plant a little later on, as soon as the demand for their product warrants same.

Burglars blew open the vaults in the safe of the John C. Bolin Brick Company, at South Zanesville, Ohio, and while they obtained only about $10.00 in money, they completely wrecked the office; windows were blown out, the telephones were torn from the wall, and nearly every piece of furniture in the place more or less ruined.

Sherman A. Case, after thirty-five years of active life as a brick manufacturer, has sold his brick plant, at Schenectady, N. Y., to DeGraff & Stevens, of that city. The latter are well known business men of Schenectady, and will install a modern plant of 50,000 daily capacity, which they expect to have in operation by the first of September.

The Mission Ridge Clay Company has been incorporated at Chattanooga, Tenn., with $100,000 capital stock. The plant of the Mission Ridge Brick Company has been leased for ten years and will be operated under the management of H. C. Brown. Associated with Mr. Brown are John D. Key, Samuel B. Smith, P. T. Rankin and Norris Headrick.

The plant of D. P. DeLong, at Glens Falls, N. Y., had a narrow escape from a very serious fire, June 30. The flames started in the kiln sheds, and for a time it looked as though the entire plant was doomed, but hard work on the part of the firemen kept the fire from spreading to the main plant. The loss is estimated at $2,000, entirely covered by insurance.

Joseph R. Thomas, who purchased, at sheriff's sale, the plant of the Callery Junction Brick and Tile Company, at Callery, Pa., is making extensive improvements at the plant, and will shortly have it in first-class condition for the manufacture of high-grade brick and tile. The plant was operated at a loss for some time, and finally went into the hands of a receiver, being sold two months ago to the present owner.

Peter Fisher, one of the members of the well-known firm of Sayre & Fisher, of Sayreville, N. Y., died at his summer home at Allenhurst, N. J., July 1, from asthma and other ailments due to advanced age. Mr. Fisher was eighty-seven years old and had been closely identified with Sayreville and the brickmaking interests for the past fifty-five years, having started the firm of Sayre & Fisher in 1851. They started business with one yard with an output of 5,000,000 per year; to-day the annual output is 100,000,000. The partnership has never been broken during all this time and the relations between the partners have always been harmonious. Mr. Fisher leaves a widow and seven children.

The Columbus and Hocking Coal and Iron Company, Columbus, Ohio, has sent out an announcement to the press stating that the plans for the brick plant which it is about to erect are now ready. The announcement reads: "All contracts will be let on a strictly competitive basis, no commissions whatever will be allowed, and all bidders will have an even chance of securing contracts. The plant will introduce many new features. Producer gas will be used and the contracts for gas engines and electrical work especially will be large. Blue prints and specifications can be obtained by prospective bidders by applying to R. A. Magly, general manager, Columbus and Hocking Clay Construction Company, New First National Bank Building, Columbus."

M. E. Jacobs, who recently sold his brickyard at Berlin, Conn., to the Hotchkiss Bros. Company, has bought another site, on which he will erect a modern brick plant. Ground will be broken for the new plant in the very near future.

The brick manufacturing plant of Thomas J. Rose, at G street and Erie avenue, Frankford, Philadelphia, Pa., was badly damaged by fire, the origin of which is unknown. The loss is estimated at $25,000, partly covered by insurance.

While superintending the unloading of clay from the company's docks on the Erie Canal, M. F. McAlinden, foreman of the brick plant of Hall & Bros., Buffalo, N. Y., was struck on the head by one of the descending buckets and badly injured.

The Grand Ledge Clay Product Company has been organized at Grand Ledge, Mich., to manufacture conduits. E. A. Turnbull is president; W. E. Wilson, secretary and general manager, and F. W. Tabor is treasurer. A plant will be erected at once.

The Fort Scott Brick Company, Ft. Scott, Kan., which has been in successful operation for a number of years, will reorganize and enlarge the plant. It will be known as the Ft. Scott Paving Brick Company. The object of the reorganization is for the purpose of increasing the working capital and enlarging the plant to the extent that the company will be enabled to supply the growing demand for the brick. In the reorganization the directors, as named in the new charter, are as follows: M. V. Barnett, H. E. West, E. C. Gates, Grant

[Continued on page 70.]

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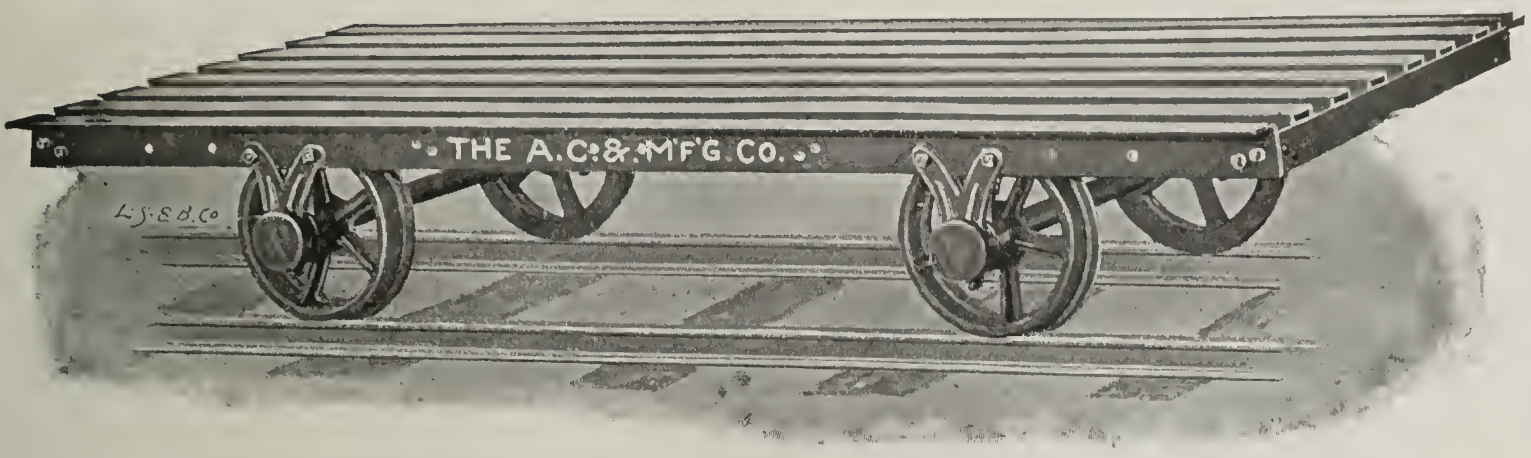
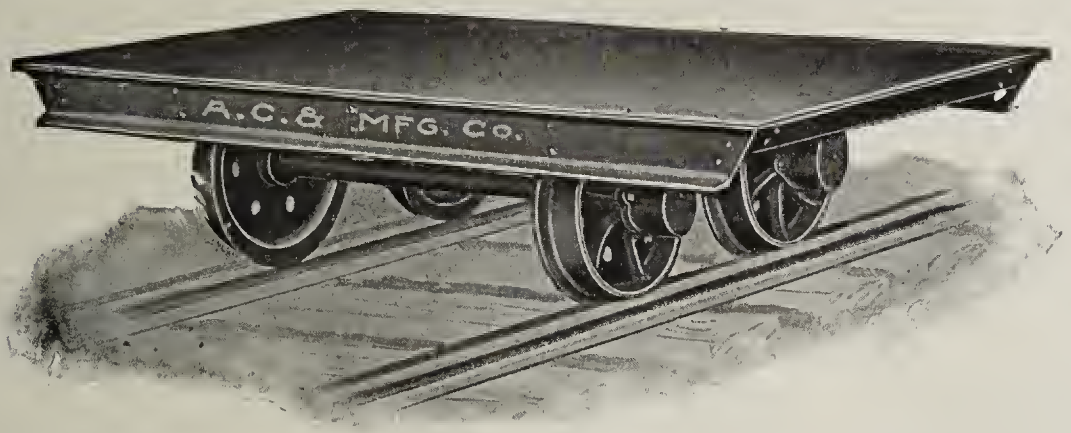


No. 108. Stiff Mud Flat Car. Steel Deck.



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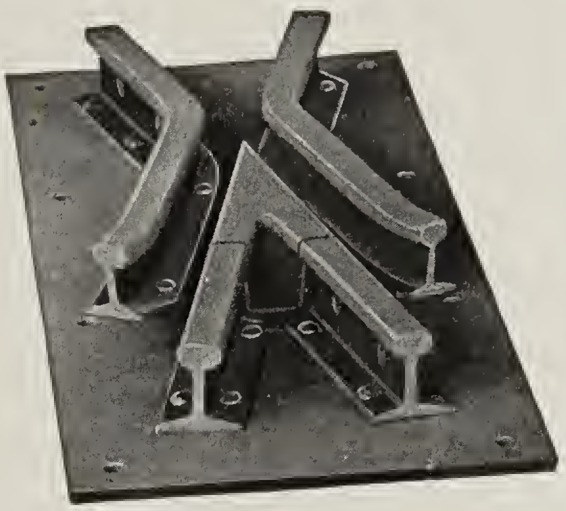

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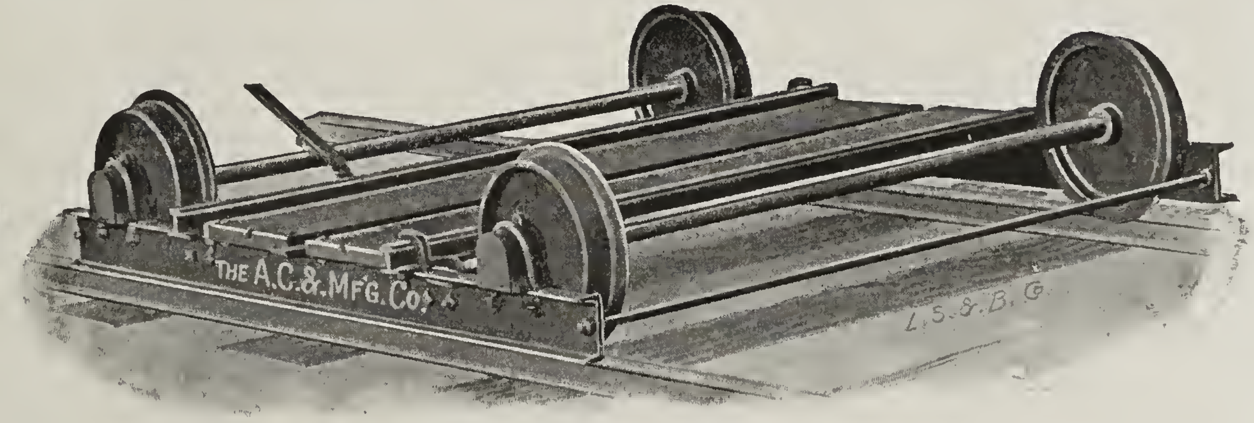
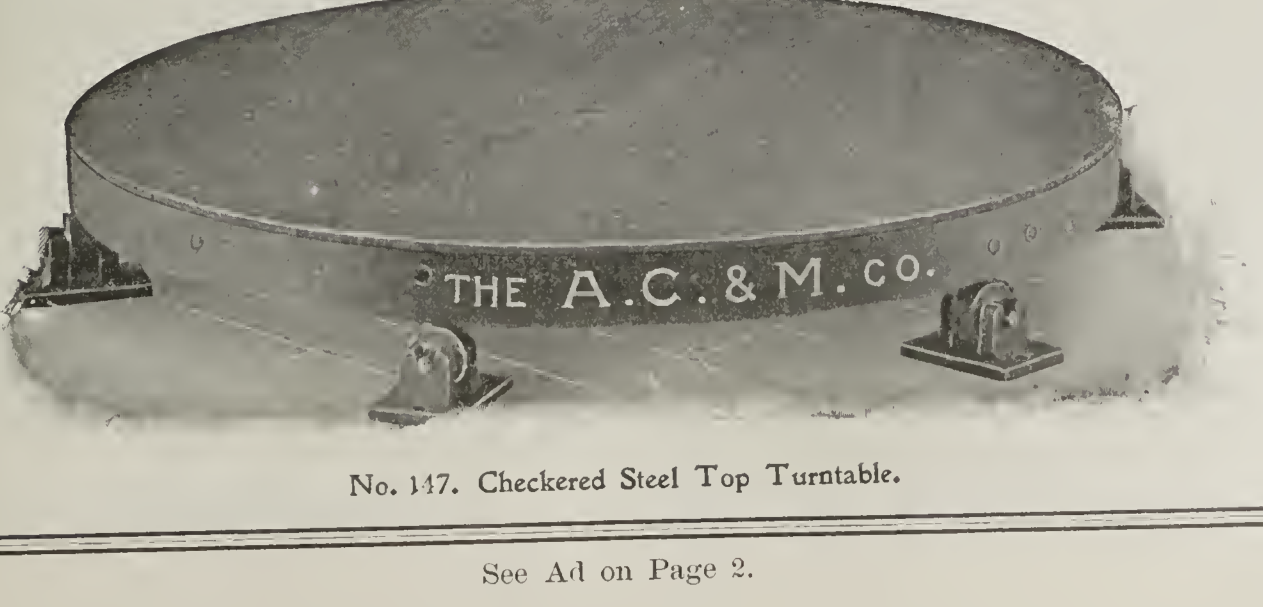
No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

See Ad on Page 2.

Hornaday, Will Prager, C. W. Penniman, M. F. Jarrett, W. H. Roberson and E. E. Reed. In making the improvements the company will expend some $15,000 in new down-draft kilns.

The Brookhaven Pressed Brick Company has been organized at Brookhaven, Miss., by F. A. May, A. C. McNair, H. Swirn, H. Cassedy, M. N. McGrath and J. J. Phillips. The latter gentleman will be general manager of the plant.

John T. Fletcher is at the head of a movement to organize a company for the manufacture of brick at Columbus, Ga. The company has purchased a site on which there is a deposit of excellent clay, and will erect a plant of 50,000 daily capacity.

The Diana Brick Co.'s plant, at Loeb, Texas, will be improved and the capacity doubled. The head office of the company is in New Orleans, and it has the contract for supplying brick for new hotels to be erected at New Orleans and Houston, Texas.

J. H. Shirley, of Columbia, and J. Hudson Williams, of Greenville, have organized a company to be known as the Greenville Brick Company. A plant will be erected at Greenville of 35,000 daily capacity, and pressed brick as well as common builders will be turned out.

The Berthelet Sewer Pipe Company has outgrown its present quarters at Milwaukee, Wis., where it has operated a plant for more than a quarter of a century, and has purchased a site at Douglasville, Wis., on which an up-to-date sewer pipe plant will be built at once.

A party of Utica, N. Y., gentlemen have bought the Coe brick plant at Ilion, N. Y., and will form a company which will soon commence manufacture there. It is expected that the work of repairing the plant and making it ready for operation will be completed in a few days.

While digging fire clay in the beds of the Utah Fire Clay Company, Lehi, Utah, three of the workmen were covered by thirty-two tons of clay which caved in on them. They were imprisoned for half an hour before they could be dug out by their fellow-employes, and were all badly injured.

Mr. William W. Dashields, sixty-seven years old, a retired brick manufacturer, of Baltimore, Md., died yesterday at his home, 118 South Washington street, of a complication of diseases. Mr. Dashields gave up active business a year ago, when his health failed. He was born in Oxford, Md., and is survived by a widow and one daughter.

The main building of the Hawthorne Pottery Company, at Hawthorne, Pa., has been destroyed by fire. All of the machinery was destroyed, the total loss amounting to about $20,000, partially covered by insurance. All of the warehouses were saved, and the plant will be reconstructed at once. The concern has a large number of heavy orders on hand.

The New York Hydraulic Pressed Brick Company has opened a new vein of clay at their Cobble Hill, Pa., clay mines, near Blackwells. They advise that the vein is one of the largest and of the best quality that they have so far discovered. They are working on a rush order for 35,000 tons of clay from the new mines, and have put on a large additional force of men. A new railroad siding has also been built to the operations.

From Connecticut comes assurances of the most liberal and profitable business in years. While last year, and the year before, were good, the present season is reckoned so much better than it is called the red-letter year. Every plant that was in operation last year is at work this season, and in some localities small plants which laid idle through the dull years, when no money was made, have started again. But even with the increased output which naturally results from this fresh influx of yards there appears to be no congestion and distribution is quite as liberal and the increase in the quantity sent out is as large, proportionately, as it was last year with fewer yards in operation. The market is found, not only in the Connecticut cities and towns, which are growing at a lively rate, but in New York as well, which takes the surplus from as far north as Vermont. Boston takes some brick from the eastern part of Connecticut, and there is more or less demand from Rhode Island. Boston's requirements are large and it must draw from outside Massachusetts. The same holds good of the lively manufacturing centers in Rhode Island. The adjacent parts of Connecticut benefit by the growth of these localities and are selling larger quantities of their product as a result.

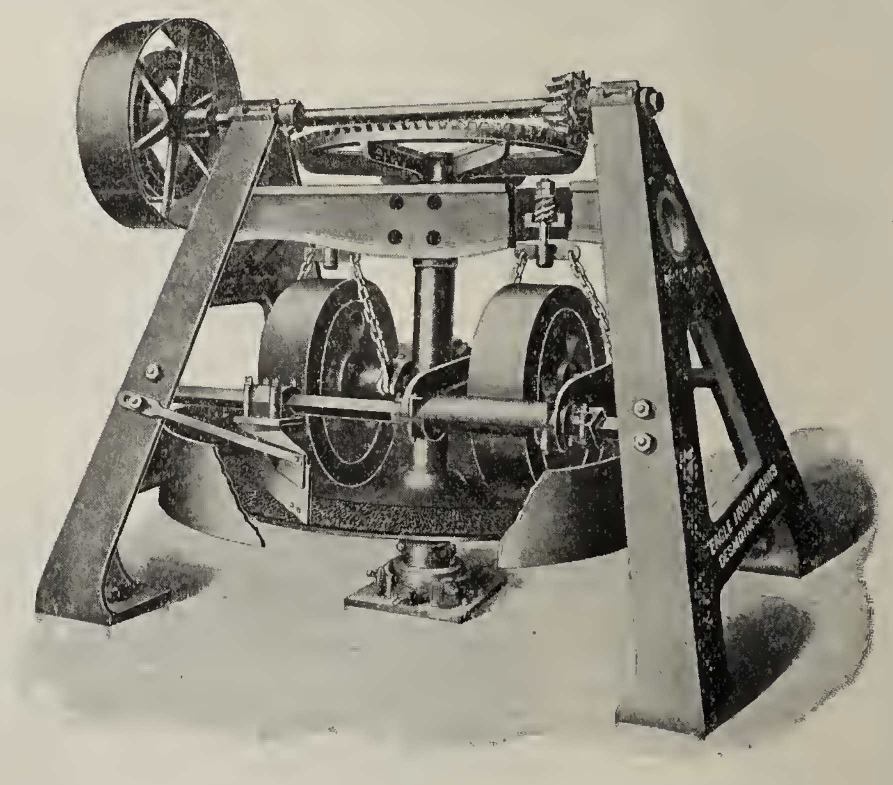
The Hugh O'Brien brickmaking plants at Brewer, Maine, have been sold to a company consisting of Elmer Littlefield, of Brewer, H. Brooks and Dr. G. H. Tibbetts, of Orrington, Maine. Mr. Littlefield will be the manager of the plant. The O'Brien yards are among the largest in Maine, having an annual output of 4,000,000 to 5,000,000 brick.

A company which has been organized at Vallejo, Cal., with a capital stock of $100,000, has purchased twenty-five acres of land on the north beach, whereon will be installed a plant for the manufacture of vitrified brick. The plant will have a daily capacity of 100,000 brick and will employ 100 men. S. W. West and F. M. Knapp, of Salt Lake City, are respectively president and secretary of the company.

The Kingsland Brick Company, of Kingsland, N. J., is working overtime. One of its officers reported that it is nearly 10,000,000 brick behind in its orders and that it is employing all the men it can get to enable it to catch up. Supt. Dempsey is a busy man these days. Several hundred men are employed all the time and the outlook is quite as promising as the past has proven advantageous. It is a comparatively new concern, but has made a good bit of money since it got its works in operation.

The Corell Tie Company has been organized at Mt. Jewett, Pa., with the following officers: President, John Lusher; secretary, H. S. Rogers; treasurer, M. J. Gallup. The following constitute the board of directors: John Lusher, A. F. Redfoot, E. C. Palmer, G. H. Boyd, E. C. McMahon, O. M. Burdick, H. S. Rogers, C. R. Bagley and M. J. Gallup. The new company controls the patents covering a combination metal and vitrified clay tie invented by Mr. Corell. Tests have been made, and orders have been placed for the manufacture of a number of them, which will be used on one of the railroads in the vicinity of Mt. Jewett.

Independent and Suspended Mullers
the distinguishing feature of our DRY PANS.



Other valuable features which our catalogue fully describes.

EAGLE IRON WORKS,
Des Moines, Iowa.

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol XLVI. INDIANAPOLIS, IND., AUGUST, 1906. No. 2.

Written for The Clay-Worker.

THE MIDSUMMER MEETING OF THE AMERICAN CERAMIC SOCIETY.

The Pottery District of Ohio Proves a Fruitful Field of Investigation for Scientific Clayworkers.

AN IDEAL SUMMER outing was enjoyed by the hustling members of the American Ceramic Society, who gathered nearly fifty strong at Beaver Falls, Pa., August 1. Those who have not attended these social gatherings can hardly imagine the cordiality of the greetings, and the good fellowship which prevails at these meetings, which takes on something of the character of a family reunion. They are wholly informal, no papers are read, and but little business is transacted. All the important work of the latter sort is left for the annual conventions held in February in conjunction with the N. B. M. A. These midsummer meetings are very helpful, nevertheless, as they enable the members to visit and inspect various plants where the wideawake and progressive ceramist discovers new ideas and gathers fresh inspiration for work both of an experimental and practical character.

Since the first mid-summer meeting, which was held in

Members of the American Ceramic Society Pose for the Clay-Worker at Beaver Falls, Pa., August 1, 1906.

Cleveland, 1899, these vacation assemblies have become more and more enjoyable and better attended. Slowly but surely the American ceramist is taking a broader view and is not inclined to keep to himself the little details which he had heretofore considered trade secrets. He meets his brother on a common level and enjoys the off-hand discussions in which he generally finds that he gives no more than he receives. This is the spirit of progress and spells advancement for every ceramic industry.

This seventh annual mid-summer meeting was a success in every detail. It could not very well have been otherwise, with such a wonderful field to cover, Beaver Falls, New Brighton and East Liverpool, and such marked hospitality as was shown by the local men of these cities. The day spent at East Liverpool was crowded with surprises for the youthful ceramist. Potteries of almost every description were visited, while trips to noisy foundries, flint mills, and trolley rides to the various plants and pleasure parks were happily a part of the day's program. Beaver Falls and New Brighton held the attention of the society for two days, and with such an entertainer as F. W. Walker acting as the host, no member of the Ceramic Society can doubt the excellent time we had while on this pleasant vacation.

Early Tuesday morning, the Grand Hotel was alive with ceramists, making ready for their first day's trip. Hearty handshakes and jolly hellos were indicative of the good fellowship which existed and would not allow the time to drag until 9 o'clock, when the party of some twenty odd made their way to the Dawes & Myler Metal Enameling plant. This magnificent plant is decidedly interesting with its large foundry, machine and woodworking shops. They manufacture enameled iron bath tubs and lavatory pieces of all description. The bath tubs are the chief product. The tubs are cast, iron molds being used for all the work, and are then taken to the sand blast room to be cleaned off. From here they are removed to the dipping room, where the base coat is put on, then they are placed in furnaces and heated up to proper temperature. When sprinkled with the glaze, they are again put in the furnace reheated two or three times, and finally set in the cooling or annealing ovens. From here they are sent to the crating rooms. This firm uses small kilns fired with gas, taking a temperature between 1200 degrees to 1400 degrees to accomplish the work. Mr. W. C. McKinney, the manager, was very indulgent and the time spent at this plant was thoroughly enjoyed.

Boarding electric cars, the party next went to the works of the American Porcelain Company, where W. A. P. Graham, secretary, and Mr. Craven, the foreman, showed us through the plant. This factory makes refrigeratory boxes and linings and a line of wash tubs. They use the ordinary run of potters' kilns and make all their ware by hand.

From this plant the hungry but thoroughly happy crowd went to the New Brighton hotel, where a fine luncheon was served. After satisfying the inner man, eighteen boarded a tally-ho and were driven over to the American Sewer Pipe Company. This plant had been shut down for six weeks for repairs and had just started up. They manufacture ordinary sewer pipe and hollow block, using lower Kittanning clay from a mine located about a quarter of a mile from the plant. It was down in this mine that an ex-president got lost while trying to successfully steer the crowd into the open air, where Mother Nature could be viewed with more ease and comfort. Manager Brown was along, but knowing full well Teco's past experience among the Indian potters' tribes and his capacity for scout and section Q detective work, thought it advisable to let that genial joker have his way. When the party had retraced its steps some twenty times, as indicated by the chalk marks placed on the walls by Prof. Orton on the return trips, the foot-sore members finally became discouraged and the famous button-holer admitted that the joke was on him.

The crowd again mounted the tally-ho and drove to the Fallston Fire Clay Company's plant, where an enjoyable trip through their plant was made. They make a flash brick from Kittanning and some Freeport clay, using stiff mud machines with iron clad dryer and down draft kilns. They sell most of their product in the Boston market.

From this plant we went to the Country Club, where an elegant dinner had been arranged for, and served on a large porch overlooking Beaver Valley. This clubhouse is built on the top of a precipice some 300 feet in height, from which point Beaver Falls and New Brighton are easily seen.

There were from twenty-five to thirty around the festive board and the two hours of dining went swiftly by. W. F. Walker modestly took the head of the table and acted as toastmaster and called upon the prominent members for informal toasts. Ellis Lovejoy was requested to tell the society the truth concerning his now famous fish story, but his nerve, strange to say, failed him and an interesting narrative has to go unrelated.

Prof. Orton pleased the dinner party with a talk on the history of the Society and the work accomplished. Ernest Mayer and Brother Gates made characteristic speeches, while Mr. Hice described the geology of the region which had just been gone over. After dinner the rest of the evening was spent in the club rooms, billiard halls, porches and bowling alleys. This was one of the treats of the convention and will not soon be forgotten by those fortunate enough to participate.

A tired and footsore crowd returned to the hotel that night, but were up early Thursday morning ready for the trip to East Liverpool, the greatest pottery city of the world. First we made our way to the Laughlin China Company's pottery. Here we were royally received by C. H. Walker, superintendent; James Miles, assistant superintendent; E. L. Carson, head of decorating department, and H. E. Ashley, the chemical engineer. Nearly two hours were spent at this interesting plant, going through the large stock rooms, visiting the decorating department and tracing the raw clay through the various processes and stages to the finished piece of fine china. This is an exceedingly large plant and we left with reluctance. Such a plant can not be thoroughly appreciated without putting more time in it than was allotted to this part of the program.

At 10 o'clock we went to the Potters' Supply Plant and were cleverly shown through the factory by DeWitt D. Irwin, the secretary. We watched with interest the men and girls making all kinds of potters' supplies, including saggers, stilts, pins, cones, etc. The one particular feature in this plant is the uniformity of their stilts and pins and the ease with which this plant does its work. After the proper weighing, blunging and mixing, filter pressing and pugging, the clay is placed in the "length mill," out of which it comes in lengths, the proper shape for use on the stilt machines. These are cut into the proper lengths and are then ready for use on the snapper machines. The latter are operated by girls, who take the pieces of clay and place them on the lower die of the machine. Then the handle of the upper machine which contains the upper die is brought down, bringing the two dies together, thus forming the stilt. The pins are made in a somewhat different manner. The clay, after coming from the pug mill, is placed in the pin machine, where the pins are squeezed out in lengths from three to five feet long. These are placed on boards lengthwise and the pin cutter then runs across it, cutting them into proper lengths. These pins are unexcelled for strength and durability. In the manufacture of saggers an entirely different mixture is used. They are made by hand, being formed around wooden drums.

The party went from this plant directly to the G. F. Brunt Porcelain Works, where Wm. C. Steele, the manager, awaited our coming. This was another extensive plant, and an hour's explorations through its many departments, where all kinds of electrical insulating porcelain pieces are made, was decidedly interesting. The method of manufacture, especially the filling of the saggers with the porcelain tubing, was new to many.

From here we went to the Knowles, Taylor & Knowles Pottery, one of the most famous potteries in America, being the first of the western potteries to take up the manufacture of white ware, nearly thirty years ago. It is one of the largest potteries in the world, and is not only noted for being the pioneer manufacturer of white ware in this country, but also for the invention of the Knowles "pull down." Of Mr. Knowles it has been said that he revolutionized the pottery business and starting as an humble tradesman became a great manufacturer. The history of this plant dates back to 1854, when Isaac Knowles built a one-kiln pottery for the manufacture of yellow ware. Today they have in use thirty-one ware kilns and thirteen decorating kilns. In this one plant there are four separate and distinct potteries and two decorating establishments. Two factories make iron stone china or white granite ware, another hotel china and the fourth semi-vitreous porcelain and dinner and toilet wares. The time spent at this factory was not sufficient for anything but a hurried trip through the store rooms and decorating departments. We were amazed at the amount of work that is being turned out by this wonderful plant. The buildings seem to cover acres of ground and every nook and corner is crowded, either with raw material or finished product.

Next a flying trip was made to the two Patterson foundries, where large filter presses and pug mills were seen in the course of construction. Their experimenting laboratory was a feature.

At 2 o'clock a hungry crowd made its way to the Thompson House, where a satisfying luncheon was served by the East Liverpool ceramists. The speech of welcome was made by Prof. Robert E. Rayman, while a pleasing response was rendered by W. D. Gates. Prof. Orton was then called upon for a speech and responded in an instructive and entertaining discourse.

About 3:30 the party boarded an electric car and made a trip across the river to Newell, W. Va., where we visited the large Newell pottery, which is now in the course of construction. The pottery, when completed, will be the largest in the world without exception.

It is a mammoth affair, consisting of thirty kilns, thirteen bisque and seventeen glost. The main buildings are 600 feet in length and 300 in width. The power plant, decorating kilns and offices are located in separate buildings. The buildings in which the finished stock will be kept are five stories in height. The trip to the pottery was a revelation to all, for the magnitude of that plant can not be appreciated by figures alone. It is planned now to begin operations the first of October, but so much work is yet to be accomplished that it is doubtful if they start before the close of the year.

We walked over to Newell Park, watched the seals and other animals for a while, and then took an electric car to Golden & Sons flint mills. After an enjoyable time at this plant a hurried ride was made to Rock Springs Park and back to the station, where the 6 o'clock train was caught for Beaver Falls. The evening was spent in Section Q meetings, where the day's trip was thoroughly hashed over and yarns and stories were spun by the imaginative members.

Friday was spent in visits to the Mayer Pottery, the Beaver Falls Art Tile Company and the Sherwood Bros. stoneware plant.

The Mayer pottery was, to the writer, the most interesting plant he had ever visited. The system, or attention to minor details, at this plant is very noticeable. Everything is clean and very well kept and all the details are well taken care of. The large fritt furnace, which fritts forty tons of material a year for the plant, the only one of its kind in this country, is a novelty. The method of manufacturing their transfer paper or prints is another feature. They use a steel engraved cylinder, which is covered with the coloring paste, heated to the correct temperature and scraped clean by means of a stationary steel polisher or scraper. Every detail of the Mayer pottery's business is watched with the greatest of care, which is one of the chief reasons for its present high standing in the pottery world. The trip through this plant took up the whole morning.

After lunch at the Grand Hotel we visited the Beaver Falls Art Tile Company's plant. Here we were royally entertained by F. W. Walker, who explained every detail of the work in a most entertaining manner.

The last pottery visited was the Sherwood Bros. stoneware plant. Here all kinds of stoneware is made, from the small souvenir bottles and vases to the large pickle jars and jugs. The visit to this plant closed the most successful mid-summer meeting of the American Ceramic Society ever held. The following seventeen names were voted upon and by unanimous choice made associate members of the organization.

John W. Black, manager M. VanOrden Company, Houghton, Mich.
M. F. Chase, general superintendent Mineral Point Zinc Company, DePue, Ill.
C. B. Cory, general manager Iroquois China Company, Syracuse, N. Y.
Ben S. Fisher, superintendent Columbus Brick and Terra Cotta Company, Union Furnace, Ohio.
John Julius Herold, Zanesville, Ohio.
William G. Hipp, secretary and general manager Massillon Stoneware and Fire Brick Company, Massillon, Ohio.
James Miles, assistant superintendent Homer Laughlin China Company, East Liverpool, Ohio.
James E. Randall, Indianapolis, Ind.
Clifford Richardson, director New York Testing Laboratory, Long Island City, N. Y.
Perry A. Smith, secretary A. F. Smith Company, New Brighton, Pa.
Chauncey R. Thomas, Amherst, Mass.
M. Guy Cowan, Alfred, N. Y.
Frederick Burnett, Jr., Worcester, Mass.
Wm. Morris Alrich, treasurer Star Encaustic Tile Company, Pittsburg, Pa.
William George Stevenson, East Liverpool, Ohio.
W. A. P. Graham, secretary and treasurer American Porcelain Company, New Brighton, Pa.
Thomas Fiddler, Sherwood Bros., New Brighton, Pa.

The following members and visitors were in attendance:

Ernest Mayer, Beaver Falls, Pa.
Francis A. Preston, Cleveland, Ohio.
Thomas Fiddler, Sherwood Bros., New Brighton, Pa.
R. J. Meakin, East Liverpool, Ohio.
W. G. Stevenson, East Liverpool, Ohio.
W. H. Gorsline, Rochester, N. Y.
DeWitt D. Irwin, East Liverpool, Ohio.
William G. Hipp, Massillon, Ohio.
Thomas H. Lant, East Liverpool, Ohio.
Robert T. Hall, East Liverpool, Ohio.
D. C. Summers, East Liverpool, Ohio.
John J. Herold, Zanesville, Ohio.
I. Mandle, St. Louis, Mo.
T. W. Walker, Beaver Falls, Pa.
J. M. Manor, East Liverpool, Ohio.
T. B. Milligan, East Liverpool, Ohio.
Richard R. Hice, Beaver Falls, Pa.
H. Reis, Ithaca, N. Y.
Alfred S. Porter, Chicago, Ill.
E. Ogden, Shawnee, Ohio.
William D. Gates, Chicago, Ill.
Ellis Lovejoy, Columbus, Ohio.
H. F. Staley, Uniontown, Pa.
C. H. Walker, East Liverpool, Ohio.
John L. Dudley, East Liverpool, Ohio.
W. E. Rivers, Oldbridge, N. J.
T. W. Clark, Darlington, Pa.
W. M. Fickes, Carnegie, Pa.
S. M. Ferguson, East Liverpool, Ohio.
J. A. May, East Liverpool, Ohio.
Alfred Plant, East Liverpool, Ohio.
R. L. Cawood, East Liverpool, Ohio.
G. C. Crossley, Trenton, N. J.
W. N. Alrich, Pittsburg, Pa.
S. V. Peppel, Columbus, Ohio.
John Lant, East Liverpool, Ohio.
William A. Rhodes, East Liverpool, Ohio.
John Stamm, East Liverpool, Ohio.
P. A. Smith, New Brighton, Pa.
W. A. P. Graham, New Brighton, Pa.
J. M. Vodrey, East Liverpool, Ohio.
Prof. Edward Orton, Columbus, Ohio.
Robert E. Raymond, East Liverpool, Ohio.
D. C. Thomas, Wellsville, Ohio.
J. E. Randall, Indianapolis, Ind.
W. E. Ashley, East Liverpool, Ohio.
N. G. Pitzer, Cherryvale, Kan.
A. V. Bleininger, Columbus, Ohio.
A. F. Hottenger, Chicago, Ill.

Written for The Clay-Worker.

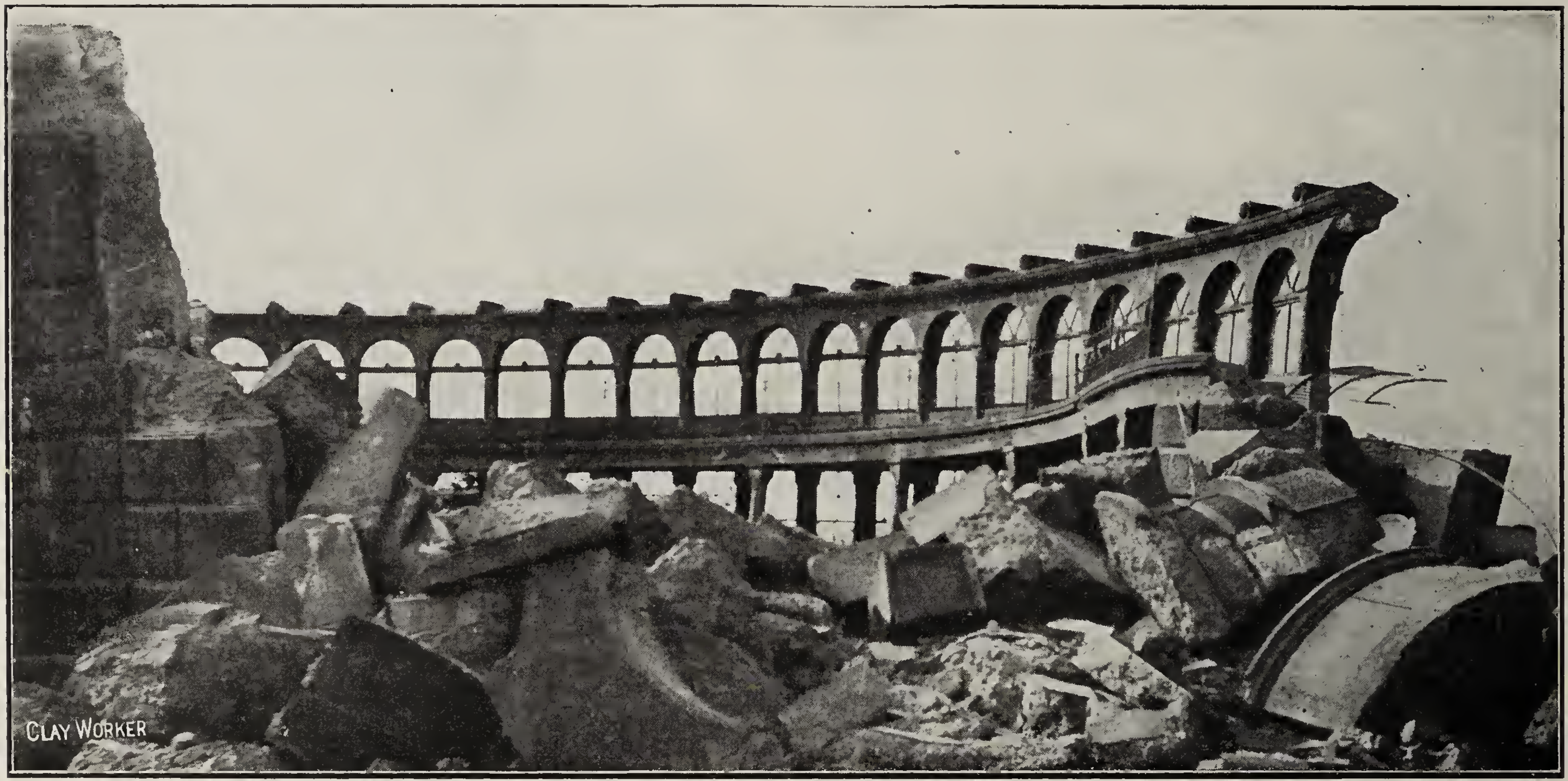
THE SAN FRANCISCO DISASTER.

Observations of an Eye-Witness Who Believes That Brick and Terra Cotta Properly Made and Properly Laid Are the Nearest Fire Proof and Quake Proof Building Materials.

I AM ADVISED by the editor himself that, while several very interesting articles on the San Francisco disaster have been contributed to the Clay-Worker, many of the readers of same will be interested in an account of the earthquake and fire which recently devastated the western metropolis, from one who was an eye-witness of the awful scene, so I will give you briefly my experiences. The earthquake being the forerunner of the fire, I will speak of it first and will ask if you have ever felt one? If not, let me advise you never, under any circumstances, to seek the acquaintance of so freakish a maiden. The experience is one that can be felt but not described. My individual introduction to it was about as follows:

At 5 o'clock a. m., while peacefully slumbering, I was suddenly awakened by my bed vibrating from four to six inches with the rapidity of a shaking screen. Rising up on my elbow to take observations, I noticed that the chairs were either playing "Pussy Wants a Corner" or "Blind Man's Buff," the floor and ceiling were playing high jinks, one with the other, and the table and chandelier were bowing to each other with a politeness not surpassed by Alphonso and Gaston. Suddenly, and amidst this scene, the chimney began throwing bricks at the tin roof with the rapidity of a gattling gun. Momentarily I expected the walls to fall upon us and crush us with the ease one would break a toasted wafer and with it all there was a rushing, rolling sound as though everything in existence was being pulverized. After what seemed an endless age, but what in reality was only forty-eight seconds, the terrible experience was over and one could begin to realize what had occurred.

In looking out the window the first thing that met my view was the Carnegie Library, in which several cracks appeared and the stone cornice and fire walls were down. In glancing further down the street, on the corner of which stood a church with a very high steeple, the debris thereof was lying on the street. As quickly as possible we were making tracks for the business section of the city, where I am glad to say the destruction was not nearly so great as I expected to find, for in ninety-nine cases out of every 100 the only damage was the falling of chimneys and fire walls, although in a few instances the corners and fronts of some of the buildings had fallen. At about 7 a. m. information came across the bay that San Francisco was burning and that martial law had been declared, after which all of Oakland forgot their slight troubles and concentrated their attention and efforts in relieving the situation across the bay. Owing to the strictness of the martial law, few people in Oakland were able to get to San Francisco, and I personally was not there until Thursday week following the beginning of the trouble, and then, as walls were being dynamited, it was very unsafe and I did not remain long. However, I saw sufficient to be convinced that the devastation was greater and more complete than any like occurrence in the history of the world. While I know nothing of the dimensions of the corporate limits of Indianapolis; nevertheless, I feel safe in stating that the burnt district in San Francisco is larger than your entire city.



Wreck of a Concrete Building, the Strawberry Hill Observatory, Golden Gate Park, San Francisco.

Much has been said about the comparative losses between the fire and earthquake. Those of the former are hard to determine, because of the fire and also because much of the supposed damage by earthquake was really owing to the dynamiting of buildings in the hope of stopping the progress of the fire. I am convinced that, except for the fire, the earthquake damages would have been of small importance, and ere this all signs thereof entirely obliterated.

When the ruins had cooled off and it was safe to travel over the city, I made several trips for the purpose of taking observations, and with few exceptions I believe I am correct when I say that the earthquake damages arose almost exclusively because of the buildings being on filled ground, or graft in the building thereof. In the east you have doubtless heard a great deal of the serious damage to the new post-office building which the fire did not touch. While it is true that building was damaged to considerable extent, nevertheless it was largely owing to its having been built on filled ground, which is very noticeable at one corner where the sidewalk has settled, I would say, about three feet and almost a corresponding settle at that place in the foundation of the building. Except for this, I think all damage to that particular building would have been confined to the plaster. Few peoplo except permanent residents realize that about 20 per cent of the territory covered by San Francisco proper was at one time a part of the bay, consequently in this particular district the earthquake damage was evidently quite heavy, although, as previously stated, almost all marks thereof were obliterated by the fire and dynamite; still it can be noticed by the settling of streets, which at places went down as much as four feet. It might not be improper for me to here state that I have for years been firmly of the opinion that the "999" and "777" were the best possible instruments for the moulding of earth into a dense and homeogenous mass, but at present I am rather inclined to grant the palm to the earthquake, for it can certainly densify earth with more rapidity than anything of which I at present have knowledge.

The readers of THE CLAY-WORKER are doubtless interested in knowing the result of the fire and earthquake on various styles of structures and specifically on the various classes of building material. Therefore I will say that frame buildings stood the earthquake much the best. In very few cases was any damage done to them and where such did occur it was usually owing to faulty foundations and to the falling of chimneys. Of the four materials, viz.: stone, brick, reinforced concrete and steel, the stone suffered the most severely from both the fire and the earthquake.

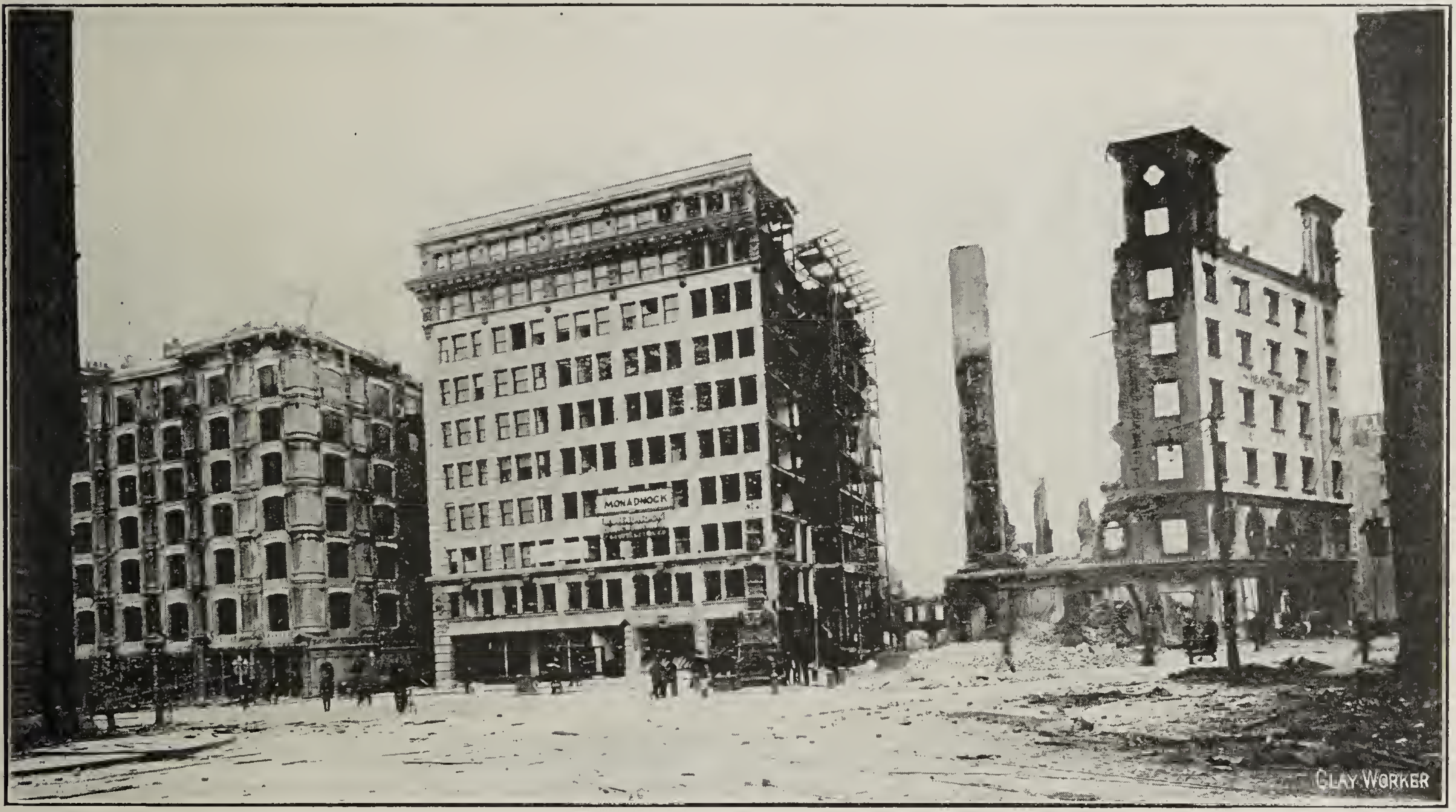
As between brick and reinforced concrete there was no building in San Francisco where a comparative test could be made unless it would be based on partitions. Furthermore, the intensity of the fire was in certain locations much greater than others, owing to the proportion of frame structures in certain districts. Where reinforced concrete was used at all, it was in districts where all structures in the immediate neighborhood were first class, and consequently the flames were not as great as in other sections, but nevertheless, in all buildings where such partitions were used that the fire attacked with any intensity whatever, all the partitions are gone and the only thing left is the wire or steel netting.

In this connection, I call attention to a photograph I am sending you of the concrete observatory on Strawberry Hill, Golden Gate Park, San Francisco, as it appeared after the earthquake. The picture tells its own story. The only other concrete structure of any importance in San Francisco was the tower of the Union Ferry Building. The latter was so badly damaged that all of the concrete has since been removed.

Any person at all familiar with structural material who will examine the ruins of San Francisco in an impartial manner can not but conclude that, taking all things in consideration, brick, terra cotta and steel construction stood both the fire and earthquake in a more satisfactory manner than any other. However, in many instances, brick made a bad showing, which was strictly owing to either the poor quality of mortar used or the manner in which they were laid.

Walking among the ruins one can not help but notice the character of mortar that had been used in nearly all brick constructions of an early date, and it would be safe to estimate that 33 1-3 per cent. of the brick that fell, either from the effects of the earthquake, dynamiting or fire, are lying on the street today as clean as they were the day they were taken from the kiln, thus showing that the mortar was absolutely worthless. This is simply a notable illustration of the mistakes made by following the American competitive bidding system and of letting work to the lowest bidder.

There has doubtless been circulated in the East photographs of the San Francisco city hall, showing the serious damage done to it by the earthquake. Such pictures only showed the actual facts, nevertheless it was not owing to the character of brick used, but simply to the manner in which the work was done. To illustrate, will say that it was caused by the falling of the tower which, without making actual measurements, I would say was 30 feet in diameter by 75 feet high, built around a steel structure, and I think the walls



The Monadnock Building, San Francisco, Which Escaped the Fire. On the Right is Ruins of the Examiner Building, and to Left the Palace Hotel.

are four or five bricks thick, but in no case and at no point except perhaps at the top was this wall attached to the steel structure, and supposing the same class of mortar was used as in other parts of the city, it is not surprising that this tower fell, but it is surprising that it had not fallen some years previous.

The only criticism I have to make upon the clay productions as showing a bad effect in the fire is upon the hollow-ware. It is the partition, floor tile and fireproofing in general. However, this does not arrive from the material itself, but I think from faulty manufacture. My office was in the Mills building, which was perhaps the first constructed in San Francisco using fireproofing and in which the effect was very noticeable. The fire at that point was very intense and the three-inch partition tile were no check whatever to it. In many instances they were poorly burned and fell out from shrinkage, furthermore many of the floor tiling shrank sufficient to loosen them from the girders, with a result that several safes were permitted to fall from the upper floor into the basement, breaking through all the other floors. The same result was noticeable in many of the other buildings. I would therefore suggest that the doctrine of hard burning be preached to all manufacturers of fireproofing and advised to be sure and see that all shrinkage is out of their materials before it is shipped.

The Elgin Brick Company's Plant.

Clay Pit Full of Water, and Glimpses of the Kilns.

In addition to the great claim being made by the advocates of reinforced concrete, we hear something from the sand-lime brick manufacturers as to the adaptability of their material to withstand the effects of both earthquake and fire. On the latter point there is really no argument, for every one knows that a sand-lime brick will not stand fire any better than reinforced concrete, both of which will go down at an ordinary degree of heat. However, if you are desirous of knowing the full effect of the earthquake upon a building constructed of sand-lime brick, I would suggest that you write Mr. J. V. Rose, formerly of Sharon, Pa., but now general manager of the Rose Fire Brick Company, Oakland, Cal., and whose factories at that point were formerly sand-lime brick, but today are entirely of wood construction, and the debris from the sand-lime brick is stacked in his yard, for sale, I presume, at almost any old price.

I see reference is made to the Monadnock building, which is referred to as an instance where sand-lime brick withstood both quake and fire. The accompanying photograph, taken soon after the fire, is conclusive proof of the fallacy of such claims. The Monadnock is a ten-story structure, with pressed brick front and sand-lime brick side and rear walls, one side being unfinished at the time of the fire. The fact that a cloth sign on the front of the building, bearing the word "Monadnock," passed through the fire unscathed is pretty good evidence that by a freak of fate this particular building was not subjected to any great amount of heat. It will also be noted that the wooden window sills were not burned. They, too, were fireproof, I suppose? When window frames and wooden signs are not even scorched, it is foolish to talk about a building being fireproof because it happened to escape the fire. The first and second floors of this building were the only ones seriously damaged by fire. The windows were practically all blown out by the dynamiting of the ruins of the Hearst building, which may be seen to the right in the illustration. The walls of the Palace Hotel appear in the extreme left.

In conclusion, it is absolutely sure that if the manufacturers of clay products will see that their goods are properly made and properly laid, there is no question but what they will both withstand the effects of fire and earthquake better than any other material will, and as verification of this statement will simply refer to the now standing walls of the old Palace Hotel which, after the earthquake, were dynamited, and all parts of the building were destroyed by fire excepting the brick walls, which stand today in apparently as good condition as when first built in about 1870. It was the first building of any importance built in San Francisco after the earthquake of 1868, and was constructed with the view of withstanding such shocks. The walls and partitions were all of brick, properly laid and I think when I state that the Palace Hotel Company has contracted, agreeing to pay $38,000 for the tearing down of those walls and at the same time give to the contractor as a premium all he can obtain for the debris, is sufficient testimonial to the fact that clay product when properly constructed is by all means the best.

J. C. Brannock.

MANITOWOC CLAY PRODUCT COMPANY GETS VERDICT IN DAMAGE SUIT.

A decision sustaining the verdict of the jury at the January term of the Circuit Court has been handed down by Judge Kirwan in the case of the North-Western Railway and the Manitowoc Clay Product Company, Manitowoc, Wis. The clay company gets judgment for $66,900 damages alleged to have been occasioned to its property by the railway company's cutting its Green Bay extension through the clay pit. The verdict is modified by a clause stating that if the railway company affords the clay company access to its pit by building a crossing the damages are to be reduced to $13,800. An appeal will probably be taken.

Written for The Clay-Worker.

THE ELGIN PRESS BRICK COMPANY.

THE ELGIN Press Brick Company of Elgin, Texas, was organized and commenced business in 1891. They manufacture "red-pressed,' ornamental and common building brick, 'buff-pressed fronts," and Roman tile.

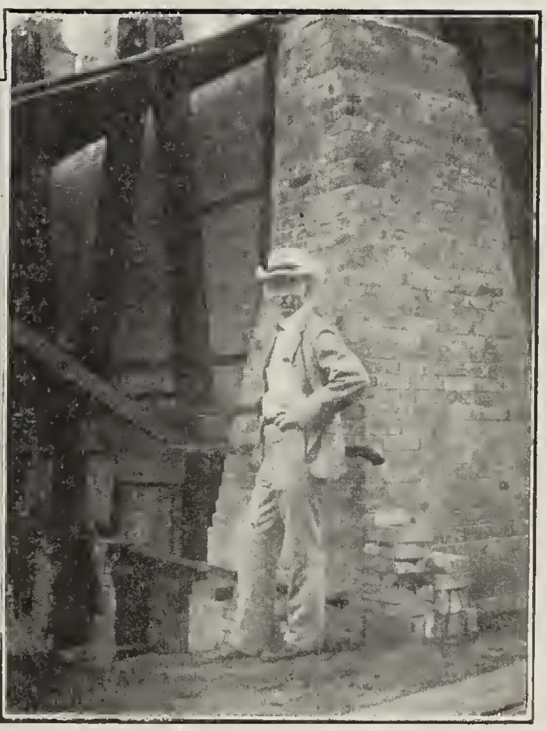
The information which follows was furnished through the courtesy of Mr. M. T. Smith, secretary and manager of the company, to whose kindness we are indebted, also, for several items concerning other brick and pottery works of his neighborhood. The country around Elgin and McDade is rich in pottery clays, and besides the Elgin Press Brick Company, there are in that vicinity the Elgin-Butler Brick and Tile Company, of which we give an account elsewhere, and the McDade Pottery, from which I have been unable yet to obtain data for an account.

The works of the Elgin Press Brick Company were located on a tract of about eleven acres of good red-burning surface clay, in the town of Elgin. The clay was rich in iron and produced a good building brick and "pressed fronts" of a rich, deep red color.

But clay is not the only ingredient in a brickmaker's success. Experience and business skill are equally necessary, it is said, and at first these were lacking. So for several years the career of the concern was rather precarious and unsatisfactory.

Elgin Dry Press Brick Machines.

Trucking Brick from Machine to Kiln.
Mr. Smith to Right.



Then in 1904 the affairs of the company were re-organized and Mr. M. T. Smith was put in charge of the works, with good results.

The plant now comprises five up-draft kilns of about 250 M. average capacity each, and one Alsip down-draft kiln of 160 M. capacity.

The process of manufacture is exclusively dry-press, one five mold, "Lion,' and one four-mold, "New Century," press being used.

Besides the red brick mentioned above, the company began in 1897 the manufacture of buff "pressed fronts," from certain deposits found six miles away, in the coal measures near McDade It was an easy matter to ship these shale clays to Elgin, and the brick they produced became at once popular and soon developed into a valuable addition to their previous production of standard red brick.

Throughout the state the brick made by this company is recognized for its excellent standard of quality. This is a reputation worth having.

The Sunset Brick and Tile Plant, at Gonzales, Texas, is now classed as the second largest in Texas, having a kiln capacity of 2,000,000 brick. The plant has eight kilns and is kept busy filling orders.

LINK-BELT MACHINERY COMPANIES CONSOLIDATE.

LINK-BELT COMPANY, under which name the Link-Belt Machinery Company, of Chicago, and the Link-Belt Engineering Company, of Philadelphia, have been popularly known, is now the owner and operator of both of these concerns, as well as their allied company, the Ewart Manufacturing Company, Indianapolis, manufacturer of the original "Ewart" detachable link-belting.

The Link-Belt Machinery Company was organized in 1880 for the purpose of manufacturing conveying machinery and was extended by the opening of a branch in New York in 1882. The growth of the business demanded that a manufacturing plant be also located in the East, and in 1888 the Link-Belt Engineering Company, successors to the firm of Burr & Dodge, was organized and located in Philadelphia.

The two "Link-Belt" companies have always operated along similar lines, though each had its own territory, while the Ewart Company continued the manufacture of chain for both the Eastern and Western plants.

The new arrangements were effected by the Chicago house purchasing the plants and assets of the Indianapolis and Philadelphia firms, thus bringing under one head the operation and management of the three companies.

The officers are: James M. Dodge, Philadelphia, chairman of the board; Charles Piez, Philadelphia, president; Glen G. Howe, Indianapolis, first vice-president; Staunton B. Peck, Chicago, second vice-president; S. Howard-Smith, Philadelphia, treasurer; P. G. Reid, Philadelphia, assistant treasurer; Dyke Williams, Chicago, secretary; Edw. H. Burr, Philadelphia, assistant secretary.

USE OF PEAT IN BRICKMAKING.

In Germany they are mixing coal and peat, making a compressed mixture which has been used as fuel in a brickyard with a result so favorable that it will no doubt open a new field for the use of peat fuel in brick manufacture. In the neighborhood of Jevers, Oldenburg, an excellent heavy blue clay is found which was considered suitable for the manufacture of hard clay paving bricks. All efforts to manufacture such bricks from this clay proved unsuccessful until a mixture of one part peat and ten parts of coal was tried as fuel. The result was a hard, brown brick instead of the light red brick which was produced formerly. The experiments were repeated until at last a first-class brick was produced. So much for fuel in brick building.—Exchange.

Prize Contest.—The German Association of Clay, Cement and Lime Manufacturers, decided at their last meeting to make a prize contest for the best model of a "Strength meter." The apparatus should be designed to measure the degree of stiffness of clay for stiff mud auger machine.—Tonind Z. No. 55, 1906.

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The Scandinavian Brickmakers.—The annual meeting of the Scandinavian brickmakers is held in summer time, and the meeting this time will be held in Kopenhagen. The last meeting was held in Stockholm. Many interesting papers are on the program, and will be reported on later on.—Nordisk Tidsskrift No. 12, 1906.

* * *

The Action of Lime in Brick Clays.—In order to determine if brick clays which have a medium percentage of lime could be used for brick manufacturing, Mr. Loeser conducted a number of tests. The principal tests were the mechanical separation by washing. He also tried the very intimate mixing by fine grinding. Of the two experiments the best results were obtained by washing, and it was distinctly shown in the experiments that fine grinding of the lime had not the desired effect.—Ker. Rundschau No. 19, 1906.

* * *

Cleaning of Brick Buildings.—In the big cities we always find the trouble that in a short time new buildings look old, and old buildings look very dirty. In many places the buildings are cleaned on the outside or planed over in order to give it a cleaner appearance. In Berlin a steam cleaner has made its appearance, and has given very satisfactory results. The whole outfit consists of a small boiler, and the man who cleans the outside of the building washes the whole front clean with steam.—Tonind. Z. No. 58, 1906.

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The Two Principal Ceramic Schools of Germany.—The ceramic school in Bunzlau had in the summer of 1905, 86 students, and in the winter term of 1905-06, 66 students. The faculty has now seven teachers, with Prof. Dr. Pukall as director. The ceramic school of Hohr did not have as many students. The day course was attended by 44 students, while the night course had 49 students. As scholarships this institution received from the German Association of Ceramic Manufacturers 200 Marks, while the Chamber of Commerce gave 100 Marks and the County Commissioners 500 Marks. The faculty consists of four teachers, two assistants and two shop assistants.—Ker. Rundschau No. 19, 1906.

* * *

Iron Pyrites in Clays.—Iron pyrites occur in many clays. When the grains are large they can be sorted out before the clay is used. If the ore, however, is very fine and evenly distributed throughout the clay bank, the clay will have to be treated very carefully in order to produce good results. According to Mr. J. Kleiber, the process which takes place by burning such clays is as follows: The iron pyrite breaks up by heating into oxide of iron and sulphurous acid. The iron oxide will combine at sufficient high heat with the clay particles forming an iron silicate, which has a gray or black color, and which is very easily fusible. When the iron pyrites are close to the surface of the brick, they will have black specks after burning. The contents of iron pyrites in some clays can be so great as to make the same totally unfit for brick manufacturing. When we fire a kiln with coal, which also contains a percentage of sulphur, then we have to be very careful in handling a clay containing iron pyrites. The steam of brick drying will readily form sulphuric acid, which condenses on the surface of the brick in case the temperature is below the boiling point of sulphuric acid, which is 360 degrees Fahrenheit. It is therefore a good idea to raise the heat above this point just as soon as the brick are dry.—Tonind. Z. No. 51, 1906.

* * *

Anthracite Slack for Continuous Kilns.—Recently experiments with anthracite slack for continuous kilns have given excellent results. So far this slack had not been used in this connection at all, as the great difficulty is that the flame of this coal is very short. This defect is, however, partly overcome by the greater heating power of the anthracite. The benefits from anthracite are cleaner firings, and consequently better looking brick. The high heating power of the coal makes the quantity used less than with other coal, and therefore it is cheaper. The best results were obtained on a continuous kiln by mixing the anthracite with lignite in proportion of one to three. The bricks burnt with this mixture were very good color, and harder than brick burnt formerly.—Tonind. Z. No. 55, 1906.

* * *

The Size of Chambers of Continuous Kilns.—In reply to a question how many chambers a continuous kiln should have, in which a fairly plastic clay should be burnt, we find the following data: For a plastic clay the chambers should be large, in order to make the flues long. It will take longer for such clay to watersmoke than if it were less plastic. Also a large chamber will not cool as quick as a smaller one, and this is another advantage for plastic clays. The proper size for each chamber is 13 feet 9 inches long, by 8 feet 4 inches wide and 8 feet and 6 inches high. Sixteen chambers would be sufficient but an 18 chamber kiln would be preferable. With an 18 chamber kiln we will get the following division: Three chambers watersmoking, 4 or 5 chambers before the fire, 3 chambers under fire, 5 chambers burnt off and cooling, and 2 chambers empty, or either drawing or filling. The stack to such kiln should be 130 feet high by 3 feet diameter.—Tonind. Z. No. 65, 1906.

* * *

Sand Lime Brick Question in Germany.—At the annual meeting of the German Association of Sand-Lime Brick Manufacturers the question of the behavior of sand-lime brick in buildings started a very animated discussion. To the detriment of the sand-lime brick manufacturers, there has been done some bad bricklaying at buildings in which sand-lime bricks had been exclusively used. The results were that some of the buildings collapsed. Investigation of the ruins showed that the mortar did not set at all, and the sand-lime bricks received the blame for this defect. In the discussion it was brought out that these collapsed buildings were not the only instances in which the mortar did not stick to sand-lime bricks. Mr. Cramer, of the Tonindustrie Zeitung, stated that the use of sand-lime brick in Berlin was in great danger, and he advised all members, whenever there was an accident in connection with the use of sand-lime brick, to obtain an expert investigation at once, to offset the public opinion in the case. The clay brick manufacturers are viewing the situation in regard to sand-lime brick with satisfaction. It has been plainly shown that, even in spite of the fact that sand-lime brick have been used for years at various buildings, its use has not been accepted without suspicion. It is only natural, therefore, that those technical clay journals which are published exclusively for the clay brick trade are enjoying the setbacks which sand-lime brick have received. The consequence of the squabble is that the German Association of Sand-Lime Brick Manufacturers has instituted a libel suit against the editors of the Deutsche Topfer and Ziegler Zeitung, and the results of the trial are awaited with great interest.—Deut. Topf. and Z. Z. Nos. 38 and 56, 1906.

"IN PERPETUUM HOMINUM MEMORIAM"*

FIRST OF THE FIVE BOOKS OF KRUHADHARA'S REVELATIONS

EVULGATED IN COLLABORATION BY E.V. JOHNSON AND F.W. FITZPATRICK

STOJAN ZIKITS-KRUHADHARA was a guest, one winter, of the Minister of one of the Oriental countries. I met him at the Legation first, and later here and there around Washington quite frequently. His was a strange character and personality. For that matter, they are all strange, peculiar, yet fascinating people, those Orientals, from the massive and irrepressible Wu Ting Fang, who dwelt among us some years ago, all down the line to the diffident and exceedingly diminutive Ushida of Siam; but this son of Parthia, Kruhadhara, was particularly so. He knew not a word of English, but as his command of French was most excellent and mine was at least passable, we got along very well together. His host, the Minister, and the attaches of the Legation, had prepared me for his coming; they were loud in their praises of the mystic Kruhadhara, descanting glibly on his wonderful talents and powers; he was a master of all the jugglery and occult arts of the East, said they; he could read the future, and knew the past, and held wonderful sway over men. According to them his was a charmed life. Yet I noticed that the first time I took him out in a touring car, he clung to the seat as does any ordinary unaccustomed mortal, grew very pale, uttered not a word the while, and heaved many sighs of relief when I set him down, whole and entire, at the Legation. I confess, however, that I did exceed the Park speed rules.

For some reason or other, Kruhadhara took a fancy to me; whether it was the novelty of the auto—afraid of it or not, he frequently rode with me, so must have gotten some enjoyment out of the sensation—or that with my fondness for matters more or less occult I made him a more "appreciative audience" than did the other people whom he met, I never knew, but we certainly were together a great deal, and on my part, anyway, there was sincere affection.

He was a man of about forty-five, tall for one of his race, dignified, quite handsome, slight, the pink of perfection in manners and dress, a gentleman and profound scholar, and certainly a personage of some importance in his own country. The man surely had a peculiarly fascinating influence over me, call it hypnotism or what you wish. There was never any smoking of strange herbs, or drinking of strange drinks, nor did he resort to the ordinary "passing of hands" over me, there were no incantations nor other charlatan nonsense; but, nevertheless, I have had some strange, uncanny, weird experiences with him. Once, for instance, we were discussing some recent excavations that had been made in Babylon, the results of which gave reason to suppose that the history of that city's fall into the hands of the Persians, and, Cyrus's entry via the dry bed of the Euphrates, was erroneous. He was so tenacious, so positive of his point that I jokingly asked him if he had been there at the time, and was in consequence a competent witness. He looked at me long and earnestly, and then dumbfounded me by calmly answering that he had! He explained that the soul, the thinking faculties, the memory he now possessed had become his merely through transmigration; they had belonged to his antecedent, affinity (or whatever he termed the gentleman) who was in Babylon at its fall. I must have smiled incredulously, for he colored slightly, but went on with his assertions. A few moments later, seeming to hark back to my skepticism, he asked me if I really cared to see Babylon as it was in those times. I facetiously assured him that I did. . . . Those great, black, wondrous eyes of his bored me through and through. I felt my muscles relax, a sort of stupor, an insiduously pleasant sense of utter and absolute rest—perhaps I merely dozed off, for it had been a trying and busy day with me. Possibly it was only a dream, a case of hypnotism, or of real thought-transference. Howbeit, I awoke an hour or so afterwards, Kruhadhara sat there beside me, calmly reading a book, and when he noticed that I was awake blandly asked me if I had enjoyed my nap! Yet, as surely as I am writing these words, Kruhadhara and I walked through old Babylon that hour!

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It was the feast of the great Baal, Bel-Merodach. Everything proclaimed it joyously, a grand pageant was passing before us, the city was in gala dress, there were blue and lilac-colored awnings stretched across the streets, while green leaves and a profusion of flowers were strewn all about. Warriors by the thousand marched by, colors flying, their shields and spears decorated with garlands, their camels and horses richly caparisoned in scarlet and gold; great floats drawn by many horses followed, whereon craftsmen in holiday attire plied their several trades; there were beautiful dancing women from strange countries and little children chanting joyful songs, cymbal players and blowers of the hydra, and there

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*Mr. Despradelle's drawings for the great monument, being of today, of the flesh, so to speak, are here reproduced in part, but the other illustrations found in Kruhadhara's Books of Revelation, like much of the printing, are absolutely unreproducable. However high a point we may think has been reached in our graphic arts, we have no means today, photographic or by any of the processes of engraving, to give even a faint idea of the virtually moving, life-like scenes that are impressed upon our minds by some indefinable something the moment we glance at what at first view would seem to be a meaningless mass of dots and lines, that, as one looks at them, take form and grow into living, moving, colored, all-explaining *realities* more than pictures.

were the beasts all be-ribboned and decorated, being led to slaughter for the sacrifice and for food that the multitudes might eat and be merry that night.

Then the scene changed to the cool of the evening, there was feasting all about, the palaces were ablaze with light and color and resounded with music. The common people were being regaled at great tables spread along the banks and terraces of the river. We walked, Kruhadhara and I, through the wonderful hanging gardens and admired the works of Nebuchadnezzar. If it was but a dream, my imaginative faculties were performing feats surpassing anything they had ever done before.

Night grew on and the revelry in the great city increased apace. It became one mad drunken orgy, a Saturnalian feast, indeed. And the maddest riot of all was in the great palace of the Kasr.

"Belshazzar is King! Belshazzar is Lord!
And a thousand dark nobles all bend at his board;
Fruits glisten, flowers blossom, meats steam and a flood
Of the wine that man loveth runs redder than blood;
Wild dancers are there, and a riot of mirth
And the beauty that maddens the passions of earth;
And the crowds all shout till the vast roofs ring—
'All praise to Belshazzar, Belshazzar, the King!'

" 'Bring forth,' cries the Monarch, 'the vessels of gold
Which my father tore down from the temples of old;
Bring forth, and we'll drink, while the trumpets are blown,
To the gods of bright silver, of gold and of stone;
Bring forth!' and before him the vessels all shine;
And he bows unto Baal and he drinks the dark wine;
While the trumpets bray and the cymbals ring—
'Praise, praise to Belshazzar, Belshazzar, the King!' "

Suddenly I noticed many people hurrying from the South, crying for help, faces blanched, children wailing, men striking right and left, making passage-way for their women and little ones; those not carrying infants were loaded down with plate, clothing and household utensils. There was a horrid din behind, more like the roar of a mighty waterfall than aught else I could think of. Feast? No feast was this!

We had gone but a little distance beyond the Kasr, and, retracing our steps, sought shelter from the frenzied crowds in a deep embrasure of the palace wall. Within there was wild consternation.

"Now what cometh—Look! Look! without menace or call?
Who writes with the lightning's bright hand on the wall?
What pierceth the King like the point of a dart?
What drains the bold blood from his cheek to his heart?
'Chaldeans! Magicians! the letters expound!'
They are read and Belshazzar lies prone on the ground.
Hark! the Persian is come on a conqueror's wing;
And a Mede's on the throne of Belshazzar, the King!"

Without there was the clash of steel on steel and the indefinable noises of strife. In all times and places, as men fight the beast within them is loosed and you hear the discordant snarls, the roars, the gritting of teeth, the deep breathing of wild animals in mortal conflict. The din and heartrending noises of battle—nay of carnage, for there was but slaughter there—grew nearer and nearer. Kruhadhara whispered to me that this was the fall of Babylon; the slaves within the city had taken advantage of the feast, when their masters and all about were drunk and unprepared, to rise in revolt, overpower the few guards at the gates, and open them to the awaiting Cyrus and his army. I saw it all and O, but it was an awful sight. I shall never forget it. Yet have I to convince myself that it was only a dream. A dream?

Blood ran as did wine a moment before, men slashed and trampled over all else; women and little children raised their hands for mercy, only to be ground into the leaves and flowers under the pitiless and ponderous, blood-maddened war-elephants. . . . I heard a wild shout of exultation—soldiers were dragging a limp something from the palace. Kruhadhara whispered—"Belshazzar!" I saw them drag him by the beard, his gorgeous vestments all torn and bloody. The look upon that face haunts me still, bloated, half-choked, eye-balls starting from the sockets, a besotted ugly face it must have been at all times, but now . . . He was thrown before one of the chariots, Kruhadhara whispered—"Cyrus!" That general made a motion of the hand—there was a flash of steel and the severed head was tossed before him. The next moment the body of the erstwhile proud ruler of Babylon was lost to sight under the thousands of trampling feet. It seemed almost as if day were approaching, but it was the ruddy light of blaze and the crackling and roar of flames warned us that the city, as well as its ruler, was being destroyed. And thus I saw the Fall of Babylon as it really was, not as history has depicted it.

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Such things as this he did, that were beyond my comprehension, inexplicable, creepy, but there was nothing of the charlatan or juggler about Kruhadhara. I could fill volumes with descriptions of strangely weird mental trips, they might be called, we took together in distant lands and in the realm of the past, and of the as strange actual visits we made about Washington to the poor and sick. Oh, yes, there was a practical side to his character, a noble one, and he was, indeed, a good Samaritan as well as seer. To the sick he was physician, nurse and kind friend, particularly to the little children. Probably it was hypnotic treatment, for he never gave or left any medicine, but I have seen him take into his arms an infant in most violent convulsions, hold it there a moment quietly, and hand it back to its mother seemingly perfectly well, cooing and clappings its little hands. I know not what power he had, nor to what school he belonged, nor do I care.

One evening, shortly before he was to leave for home, Kruhadhara and I had been for a walk. Seeing some men working in a ditch, had turned our conversation to the labor question. From that we drifted to a general discussion of the nation, our economics, our wonderful resources, the thrift of the people, the place we had attained in the commercial world in so brief a span of time, the growing power of individual wealth. Kruhadhara's opinions upon these matters were remarkably broad and his information accurate. He expressed the profoundest admiration for our accomplishments, while at the same time he was aware of, and did not hesitate, to call attention to our national faults, our shortcomings, and our mistakes.

Later, in my library, he grew more vehement than I had ever heard him, he walked the floor and gesticulated, emphasizing the points he made. He spoke of wars that were to come, describing the long-drawn out conflict between Russia and Japan (that we have already seen verified), trouble between Germany and this country, internal upheavals in France and Austria, a complete change in the government of Italy, complications worse confounded in the far East and most radical reforms in our mode of government and living. From being deeply interested I grew amazed and endeavored to stop the flow of prophecy long enough to draw more detail upon one incident at the time, but in interrupting him I may have spoken in a tone somewhat doubtful and, indeed, I may have even felt so. One is apt to be a trifle skeptical when it comes to hearing the future the events of years and years unfolded before him, described most graphically but with kinetoscopic speed. With still greater vehemence, not untouched with reproach, he answered: "Your spirit has accompanied mine into distant lands, we have made incursions into the past; you have seen things usually veiled from the eyes of mortals; but your mind works slowly, your imagination is finite, it has limitations that prevent you from appreciating the possibilities that exist, the certainties that a constructive mind could well foresee. You can understand the past, you have seen its effects, but you understand nothing save when things are tangibly demonstrated, made living facts, fleshy realities. Like your own biblical Doubting-Thomas, you must place your finger upon the wound, you must see it with your corporal eyes. Your vision is too dull to appreciate the picture which exists upon the sensitized plate before the "developing" chemicals destroy the beauty and blur its marvelous correctness of detail. I would that I could emancipate you from your limitations for all time! But I can remove the scales from your eyes for a while, at least, I can give you a glimpse of what is beyond. We have wandered into past ages together. Come with me into the future. I will show you the realities, the details about which you express such curiosity and much else that will arouse your interest; or, stay, better still, I will show you the records of the years to come. You talk about the accuracy of contemporary history of events, as you term your favorite reading—the newspapers of the day. Well, there they are, the records of the hour, the newspapers of tomorrow, of the tomorrow after that, the next year—there—read! read!"

"Under the feet of the pitiless and ponderous war elephants . . . . "—Page 144.

And he thrust a newspaper into my hand. At his touch, hypnotism again, mayhap, the skepticism of the twentieth century man, the doubts of the neophyte all passed from me, and I felt a strange certainty. Faith!

Kruhadhara stood before me and handed me newspaper after newspaper. Those I first glanced over were the usual ones of our own time, perfectly familiar even to the peculiar odor and touch of freshly-printed paper. I can read the French, German and Japanese quite readily and, of course, the English, and he handed me papers only in those languages—yet I had never told him I knew German or Japanese. He handed them to me from beside him, still I saw no pile of papers there, nor did I see where they were placed after I had scanned them over. In truth, I was so enthralled in what I was reading that I gave scant thought as to where those papers came from, and to where they went. I read as man never read before. Read, did I say? Devoured, I mean!

Think of a man reading into the future, the turmoil of daily life, the calamities along with the trivial happenings of the day, and that for years and years ahead of his time. And much of this was also depicted by engravings as well as by type, for I noticed that the papers of the near future were far more profusely illustrated than are ours of today. These illustrations grew to be examples of the highest perfection in graphic art. The rough cuts and cartoons of the present were followed by the most dainty pictures, the equal of anything done in present-day art magazines. Then I noticed that illustration appeared to go out of vogue for a while, and the papers become smaller. There was a tendency to condense matter, there was no advertising, nor "scare-heads," nor display type. The papers became mere pamphlets of a few pages, but tersely and clearly written. The general news was no longer called telegraphic and the page devoted to it was absolutely alike in all papers of the same language, and the page was headed "Solar Messages." The printing also changed from our present mode, it was clearer, easier to read, more as if photographed than impressed; the paper, too, was slightly colored and very thin, but opaque and strong. I did not pause to examine into the details of make-up very thoroughly, I was too wholly engrossed with the subject matter, but I noticed those changes I mention, the conspicuous ones, as the papers flashed before me, as one having much to do with newspapers naturally would, even under the most extraordinary circumstances.

I felt my old newspaper instinct creep over me, and mechanically put my hand to my pocket. Krahadhara divined my intention and handed me the familiar blue pencil, directing me to mark those articles in which I evinced the greatest interest with the figure "one"; others with a "two," and so on, and as those papers left my hands they bore the old blue symbols known to every exchange editor.

I have no idea how long I read. Surely thousands of papers were handed me. I grew expert, indeed, in gleaning only the most important events. Heaven knows how I desired to read and digest every word before me! There was a crisis in the world's affairs. I have read all that led up to it and pictured to myself the terrific upheaval that must needs ensue. I was in a feverish, excited state, every muscle tense, my nerves on edge, my wits sharpened to extreme keenness. . . . Kruhadhara, instead of handing me the next and much desired paper, held out one of only a few weeks ahead, saying:

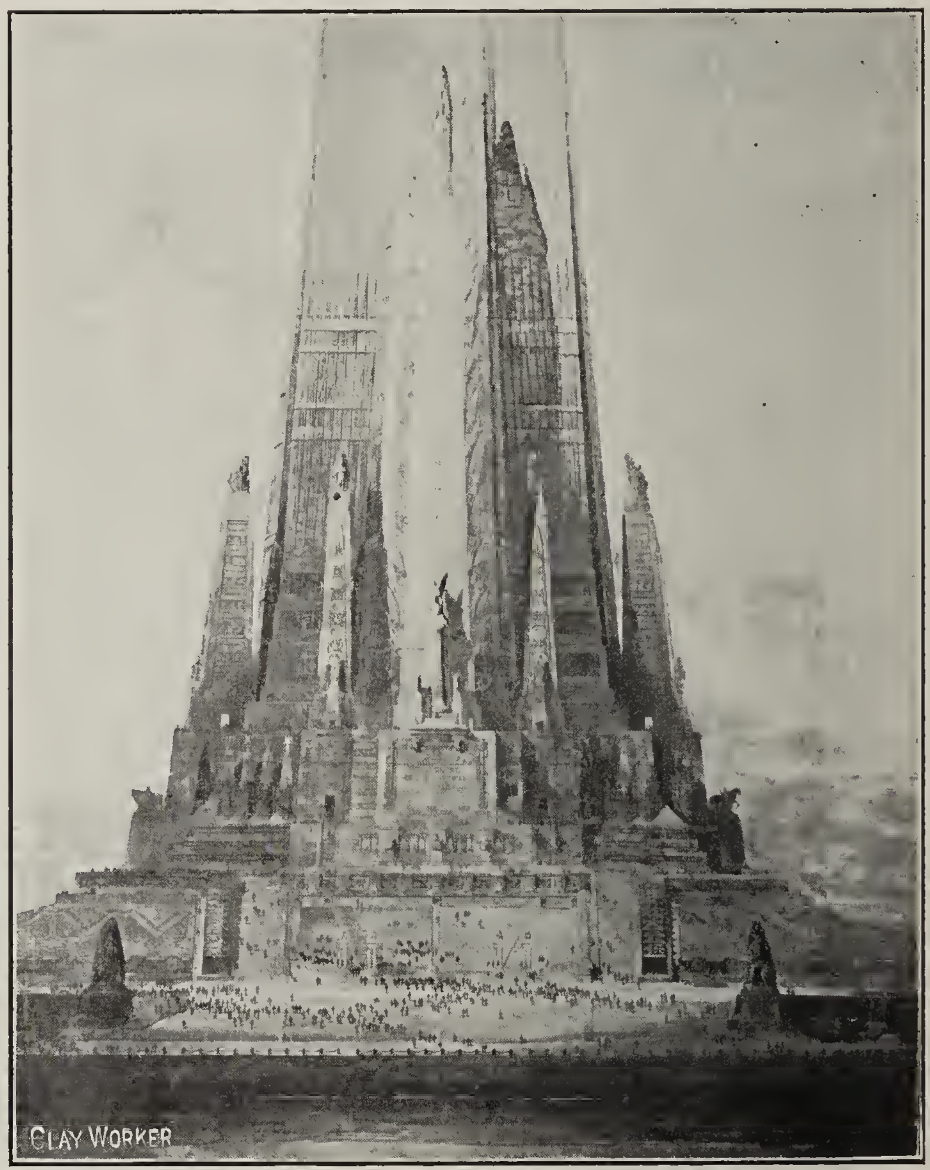
"You have forgotten to read a little item that may interest you." It was an account of the sinking of the yacht Padisha, that went down in a storm with all hands on board, wrecked near the Isle of Crete in the Mediterranean. To me it seemed an unimportant item, a mere incident compared to the momentous affairs I had grown accustomed to, matters that affected the whole world. But I read it to please him, and then suddenly recollected that that was the name of the yacht he had been invited to meet at Marseilles when his friend, its owner, would carry him as far as Beyrout on his homeward journey. I expressed sorrow that his friend should so perish, but there, just after the friend's name were two others, that of Monsieur Dumartel of Tours and—Kruhadhara's! Forgetting even the world's crisis I grasped his hand, begged him not to go on that yacht, that now that he knew its fate, he would surely warn his friends that they, too, might avoid it. He smiled and thanked me for my interest and, filling me a glass of wine, he told me that my nerves had the better of me, that I was excited, that I must not think any more of the yacht, or of what I had read; he felt that he had done wrong in allowing me to read so much. I begged him to forego the trip, implored him not to go, but he only urged me to forget all about it and go to my room and sleep. He held my hand in his, a long warm clasp, uttered not another word, raised his eyes as if in prayer, then hurried away . . . the last I ever saw of my mysterious, charming, and dear friend Kruhadhara.

Business called me to Boston the next day, but I planned to be back in time to at least see him off. Returning, I found he had already left for New York, and sailed that morning on the Turenne. The idea that he was bent upon that fateful yacht trip haunted me. The succeeding days were busy ones and the time fairly flew by, yet I seldom forgot that last night with Kruhadhara. My family and friends noticed my preoccupation, but they attributed the change to business cares and worries. Nor did I feel called upon to tell anyone the true cause of the change. No man deliberately makes of himself a subject for the derision, the pity of his associates, and it would certainly have caused people to at least smile had I told them I was depressed, worried and in sore distress about the future of nations, of peoples and of friends, knowing so much about the dangers that threatened them, having read it all in the future! Kind friends would certainly have taken me in hand.

Ten days later I found a package of considerable size in my library. No one knew how it happened to be there, no one had receipted for it, it had not been expressed, but there it was, addressed to me in Kruhadhara's delicate, foreign handwriting. I opened it; five large, handsomely bound scrapbooks, containing marked clippings from newspapers, the newspapers I had read that night—the newspapers of the future!!

Each book bore a title in gilded letters below the numbers One, Two, Three, Four and Five, and in each were the clippings I had marked with those numbers. I see now the plan of division, for each volume virtually treats of a subject or period by itself, the whole a history of the future, told in clippings from the newspapers of the time.

No note or word accompanied the parcel. The book bearing the number One was entitled "In Perpetuum Hominum Memoriam." On the title page was the clipping that had caused me so much anxiety, the account of the loss of the yacht Padisha, with Kruhadhara and his friends. The clipping was inscribed in a broad mourning margin and below it, in his handwriting, the simple word—"Adieu."



Despradelle's Wonderful Design for the National Monument

Next morning, reading over my "Post," the first item I saw in the foreign news was that identical dispatch. Word for word, I compared them with feverish haste, the punctuation, his name mis-spelled by the easily made error of omitting the second "H," everything alike. Astounding, marvelous! Poor Kruhadhara had gone deliberately to his fate. Was it suicide, or was it but the graceful yielding to what he felt and knew was the inevitable, the passing into other form, into another life, a progression? Who will undertake to analyze that strange man's motives and acts?

At first I was prompted by an intense human curiosity to read, to fairly absorb those books Little by little, their reading has become a cult. I approach them with a sort of religious reverence. They are my evangel, though that term hardly applies for they far from always contain "good news." Day by day I compare those clippings with the actual papers of the date, and day by day does their terrible accuracy inspire me with more and more awe. Prophetic books! The reading I did that memorable night was a sudden shock, surprising, dumbfounding, and astounding revelations. I had but impressions of it afterwards, I was constantly trying to remember some particular date or item that I had seen; the trying to locate events, dulled my fuller appreciation of their import, but now, with it all there before me in an open book, in black and white, told in the prosaic, the matter of fact way, even the most momentous events are chronicled by the press at the time of their happening, and then verified, day by day, by the actual occurrences! Why, I sometimes fear the thing will drive me mad. I feel that I must go upon the roof top and cry forth my warnings to the people, ay, that I should go into the world as did the prophets of old and seek to lead people from the many perils that beset them and their countries. And yet, what good can I do? Often have I advised friends to do this, or that, or avoid the other thing, knowing full well just what the result of their intended acts will be. Never has it done a particle of good. It has always been the same as in the case of Kruhadhara, they have gone right on, regardless of advice, warning, pleading, seemingly bent on fulfilling the prophetic account to the letter. Those books must be the record of inevitable, inexorable, pitiless, unchangeable Fate!

At times I feel as if it were better that I should consign them to the flames and go down to the grave, when my time comes, with lips sealed, almost glad to change the horror, the positiveness, the dread of a known future for even the uncertainty of the great beyond. Then again, it seems almost a sacred duty to proclaim at least a part of this information, this weird "mirroring of the years to come." While these things can not be changed, people may be, at least, prepared for them. For what other reason could it have been given me? Of what importance am I that I alone should have it?

Yet I fear the result of disseminating this knowledge. In this, as in much else, ignorance may indeed be bliss. Of what advantage has it been to me? Have I been able to do any good with it? Has it benefited anyone? It surely has not contributed to even my own happiness. On the contrary, I have not known a moment's peace or happiness since receiving Kruhadhara's revelations.

There is one volume, however, that contains little of the awful. There is no mention of the wars, of the jealousies of nations, the degradation and extinction of peoples that we have looked upon as world-powers, the oppression of the weak by the strong, the merciless onward march of Greed, and Avarice, and Crime, the horrors that make one forget the real progress, the good that there is and ever will be in the world, the good that will eventually redeem the world.

[TO BE CONTINUED.]

BRIGHT OUTLOOK FOR TERRA COTTA.

OTHER writers have done and are still doing ample justice to the lurid scenes of the world's greatest holocaust. We feel almost lonesome in having escaped with no further loss than our offices in the Mills building and a few thousand dollars worth of stock broken by the slight crumbling of the earth's surface at 5:13 o'clock a. m., April 18, 1906. Then was the commencement of the new San Francisco.

The exercises were intensely interesting and wound up with a baccalaureate sermon of flames whose eloquence held spellbound the throngs on every hilltop and devoured their every passion save that for the new city on the old site. The spirit of the days of '49 is now ancient history. The spirit of 1906 has the rostrum and will do all the talking during this century. It has appointed committees whose work will extend into the next century. "Terra Cotta" is chairman of one of the most active committees on the list, and already has to report progress—we have been awarded a forty thousand dollar contract for the architectural terra cotta which is to adorn the splendid new skyscraper for the Humboldt Savings Bank, to be at once erected on the southerly side of Market street, east of Fourth street.

Architectural terra cotta is too well established in the east to yield its own place to the onslaughts of the reinforced concrete men. I know full well that reinforced concrete has a very valuable place in structural work and will receive, at the hands of our architects, the full measure of recognition, no doubt, but owners and everybody else will find that the class "A" buildings will not be put up without their full share of terra cotta ornamentation. Our best buildings here stand as monuments to its worth today, and are the best possible arguments that can be placed.

We, of course, have made a mistake in California, that is not likely to be repeated, in fireproofing. It has been well known for some years that terra cotta fireproofing should be porous and not dense, but owners and architects have been loath to incur the slight additional expense necessary to producing porous terra cotta. All of these facts will now have their proper recognition among the best class of architects, and the new buildings of San Francisco, where fireproofing of this nature is required, will be up to date with the best eastern practices.

W. E. DENNISON,
President of the Steiger Brick and Terra Cotta Co.

Written for THE CLAY-WORKER.

NOTES FROM TIDE WATER, VIRGINIA.

THIS YEAR has been the banner year in Tide Water, Va., in the building line. A great deal of this is due to the fact that we are to have a great exposition next year at Norfolk. The Jamestown Exposition Company is pushing the work very rapidly now. Many of the large and handsome buildings are well under way, the sub-work all being completed. Many of the States have contributed liberally and the Government has appropriated about two million dollars. In the near future I will give a write-up on the Exposition, with photos and plans of the grounds. The extensive building created by the Exposition and the new Tide Water Railway Company has kept the brickmakers of this section very busy; in fact many of them are booked ahead for sixty days. They have also had many drawbacks in the way of wet weather. The month of July has been one of continued rain; it has rained as it never has before—twenty-seven rainy days out of thirty-one, and ten inches of rainfall for the month.

The Fuller-Raymond Brick Company was granted a charter on July 20 to manufacture brick. Incorporators: Geo. C. Raymond, president; M. J. Curry, vice-president; J. L. Fuller, secretary and treasurer, all of Norfolk, Va. Capital stock, $25,000.

The city of Portsmouth is having a number of its streets paved with brick. About thirty car loads of the brick have arrived. They are a light colored brick, made by the Mack Manufacturing Company. The Southern Contracting Company, of Norfolk, is doing the work. They also have the contract for about $60,000 worth of vitrified brick paving in Suffolk. Some of the brick have arrived for this work, also, and they are now setting the curbing and will be laying brick in a few days.

The Nansemond River Brick and Tile Company, at Reid's Ferry, Va., are making extensive imrovements at their plant No. 2. They are installing new Chambers machinery of larger capacity than the old ones. They have erected a large brick engine, boiler and machine house, with concrete floors. They have a capacity of fifty thousand per day at this plant, and one hundred thousand daily capacity at plant No. 1. In the near future they will put in a steam shovel to handle the clay.

Mr. B. Riddick has now in operation in East Suffolk a cement brick plant, with a capacity of ten thousand brick per day. He is making these brick in all shapes and artificial colors. He is also making concrete hollow block in smooth and rock face, porch columns, etc.

The first hollow block house ever built in Suffolk is now being built by Mr. J. E. Green. The brickmakers are not losing any sleep over this new artificial intruder; it rather tends to strengthen the popularity of brick as a building material for strength, durability and beauty. This house changes color under changeable weather conditions, and nearly every time I see it it is a different shade.

All through Tide Water, Va., there is a great scarcity of mechanics and laborers. The supply of bricklayers is away below the demand. Bricklayers' wages are $6.00 per day; carpenters, $4.00; plumbers, $4.00; painters, $3.00 to $4.00; hod carriers, $2.50. The laboring class, which is composed largely, in fact nearly all of colored help, is very scarce; they are getting from $1.50 to $2.00 per day. Nearly all the mills through this section are running with a short force. The steamship lines entering Norfolk have great difficulty in discharging and loading their ships. H. L. Jacobs.

Written for The Clay-Worker.

A PROSPEROUS NEBRASKA BRICK PLANT.

SOME FORTY miles due west of ,Lincoln Neb., is the thrifty town of York, and within its limits is the plant of the York Brick Company, which is one of the most important industries of that section. So far the precent season has been one of the most satisfactory in the history of the company, the demand for York building brick being sufficient to take the product of the plant as fast as turned out. From present indications there is little likelihood of the company being able to accumulate any stock to speak of before closing down for the winter. A stiff clay brick is made from a very plastic surface clay which needs no pugging and requires little attention or preparation for manufacture.

Plant of the York (Neb.) Brick Company.

This plant gets its yellow clay, which is free from sand or troublesome ingredients, out of a clay bank from sixty to eighty feet in depth. They plow the surface and haul the clay to a dump bridge in wheel scrapers. The clay is dropped into cars below the opening in the bridge and conveyed to the clay house by means of a drum and cable. The clay is deposited in soak pits (four in number, each having a capacity for material sufficient to make 40,000 brick) where it is moistened and allowed to stand for a few days. It is then taken directly to an Adrian brick machine, from which the clay is forced into a Freeze hand side cutting table.

The clay is so easily worked that neither pug mill nor crusher is necessary. At the cutting table the brick are hacked eighty-two at a time on slated pallets, and trucked to the dryer, where they remain from four to six days. This plant has four dryers, two constructed of brick and the other of frame. Exhaust steam is used during the day, while live steam is used at night. The exhaust steam travels the entire length of the dryer twice and then empties into an exhaust chamber, from which it is drawn into the boiler again while hot.

The one difficulty this plant experiences in the manufacture of its product is the drying. The clay is very plastic and cracks easily, so that much time must be taken in the drying period. The utilization of the waste steam for the drying enables this plant to reduce their time of drying from eight to four or five days.

The surface clay gives them the most trouble in this respect, but as they go deeper into the clay bank the more easily the clay is dried. All of the clay conveyors, cars, winding drums and cables were furnished by the Wallace Manufacturing Company, of Frankfort, Ind.

The brick are burned in three kilns of the company's own construction; two are twenty feet down draft kilns, while the other one is a common up-draft clamp kiln. It takes five days to burn from start to finish, Iowa nut coal being used. The clay burns a good red color and makes a fine building brick. The company is putting forth all its efforts to make the supply equal to the demand and is hard at work in its endeavor, so that experimental work has not been possible. However, in the near future, this company expects to branch out into the manufacture of drain tile, as their clay is well adapted for this purpose.

Getting in the Clay by Cable Hoist.

Tramway Leading to Machine House.

The plant has a daily capacity of 20,000 brick and sells the most of its ware at the yard. A little shipping by rail is done. They get from $7.00 to $8.00 at the yard and have no trouble in finding a ready market. The source of their water supply is two driven wells. The labor situation is good, the men work ten hours a day and command from $1.50 to $2.00 daily wages. The plant operates only part of the year, closing down the first of December and starting up again early in April. The plant expects to build two more steam drying sheds in the near future. The erecting of a continuous kiln is under consideration. The stockholders of the company are influential men of York, Mr. G. W. Post being president. The practical management of the plant is left with the superintendent, Mr. C. W. Northrup, who is the right man in the right place, being an "old-time Hoosier brick and tilemaker," having formerly engaged in the business at Colfax, Ind.

COLFAX.

Written for THE CLAY-WORKER.

NORTHWESTERN OHIO NEWS NOTES.

ACCORDING to the general information received from the manufacturers of brick in Toledo, the mid-summer business in brick has been and is what may be termed normal. Last season trade was "choppy," the conditions throughout the entire year being quite satisfactory. The tone of the business this season has been and is still of a very healthy tone, far outstripping the same period of last year. While July and August are invariably dull months, July trade was much better than the same month, a year ago. As to the prospects for good trade this fall, all the local manufacturers are preparing for very substantial business. This speaks well for Toledo, although other building materials, such as concrete and cement, have played an important part in making inroads into the brick business of the city.

A Portion of the Up Draft Kiln and Dryers.

One of the "Twenty-Foot" Down Draft Kilns.

One of the Steam Heated Dry Houses.

The Power Plant.

All the local plants are running, and from all indications of the present they will continue to do so until frost puts a stop to operations. The deliveries for the month thus far are up to the standard.

Local brick men in general report considerable difficulty in being able to secure the "right kind" of experienced help with which to operate the plants. This feature becomes more manifest as the end of the brickmaking season comes nearer, as men begin to look for jobs of a substantial nature for the long winter months. However, the local manufacturers have been having considerable trouble along this line from early in the spring, as men are not prone to "take to a job" for the few months that the brickmaking season lasts. The season has been exceptionally good as a whole, and the fact that experienced help is difficult to get during any brickmaking season, this year thus far has been rather a trying one for the local concerns.

As a positive indication that the local brick business has been of a very healthy tone, one has only to turn to the records of the city building inspector and note the large number of permits that have been issued during the year thus far. As stated in previous issues, Toledo building operations began very early, in fact they continued throughout the entire winter season, Toledo enjoying a very substantial building boom from the very first of the year. In looking over these records it is noted that the permits issued during January were sixty-four, with a total valuation of –141,890; February, seventy-eight permits, valuation, $201,010; March, 122 permits, valuation, $773,675; April, 161 permits, valuation, $388,435; May, 134 permits, valuation $407,922; June, 156 permits, valuation $450,985; July, 121 permits, valuation $248,591. From the above figures it will be noted that the total number of permits for the seven months reach 836, the total valuation being $,2,612,508.

As another good indication that the brick situation is of a healthy tone, there are quite a large number of plans for good-sized structures to be erected this fall in the hands of the local architects. Many of these are sure of materialization.

That the cement building block business has not been as "rosy" as it might be, is indicated by the Toledo Cement Building Block Company now being in the hands of the United States District Court. The debts are listed at $2,428.37, with only $371.44 as assets.

A. E. Macomber & Co., the local brick manufacturers, have had plans drawn for the erection of thirty houses, to cost from $1,000 to $2,000, the houses being erected to sell on the installment plan. The company will expend about $50,000 in the erection of the structures.

Bluffton, Ohio, is having $50,000 worth of pavements put down this year.

Fremont, Ohio, is also in line for paving improvements, contracts having been recently let for the paving of four streets at a total cost of -40,000. T. O. D.

Written for The Clay-Worker.

NEW YORK AND THE EAST.

DEMAND FOR BRICK has not changed materially during the month just closed, but owing to a number of different causes the price of Hudson River brick has been reduced in the New York market. One thing was that the output has about reached the limit of consumption. There have been some accumulations during the past week or two, but it is said that the principal influence was the fact that outside interests were shipping brick to the New York market and underselling the Hudson River manufacturers. To prevent this and to hold the market for themselves, as they have done for several years, they reduced quotations. There is plenty of demand for brick. The market is quite as active as it has been and the prospect for continuous business is quite as good as it was earlier in the season. Building operations have not declined, so far as can be seen. The number of permits granted in New York in July was greater than the number granted in July last year. The Bronx section of the city is the only one that shows any reduction in the number of permits granted. That has been overbuilt, more especially in the flat house department, and operations are likely to be curtailed there until population has an opportunity to catch up. Elsewhere the operations under way and projected are as large and will require as much raw material as ever. Prices for brick are quoted in New York as follows: Front buffs, No. 1, $32.00; grays, shaded and speckled, $32.00; white, No. 1, $32.00; Hudson River common, $6.00 to $6.50; light, hard, $5.00 to $5.50; pale, $4.00 to $4.50; No. 1 fire, American, $25.00; No. 2, $20.00; Scotch, $35.00.

In the territory tributary to New York much the same conditions prevail which have been prominent for the past year or more. A good deal of building is in progress and more contracts have been let, but the end is not even in sight. Immense factories are in process of construction. And a good many more brick than usual are being utilized in the construction of dwellings which are going up everywhere. The high price of lumber has helped brick greatly and in and about New York the reinforced cement craze has not materially injured the brick business. A few factories have been built of it, but so far builders are extremely chary about using it. The experience of several manufacturers who discovered more or less disposition to shake apart has not encouraged its extensive use in this vicinity. Public and semi-public works are consuming considerable quantities of brick, and these are likely to increase, not only this season, but next, and some very large work of this kind is under consideration in the contiguous parts of New Jersey.

No note of discord is heard from the yards along the Hudson, but the month has been rainy and some injury has been caused by this. It really amounts to little, but it is enough to take the edge off of profits in some instances. The yards have kept busy all the time, but there have been few clear days and the weather a good share of the time has been damp and disagreeable. The demand has compelled manufacturers to keep going, regardless of weather, however, and about the usual quantity of brick came down the river during July.

Along the Hackensack much the same conditions prevailed as during July on the Hudson. The weather has been damp and a good deal of rain has fallen, including two of the hardest showers seen in that vicinity in many years. Nevertheless there has been a good business and trade is as good as it has been. Manufacturers find it difficult to fill their orders and are now somewhat behind in that way, though the output of the yards is quite up to the limit. A few are burning more than ever before in their history.

New England.

From Boston come reports of a continuation of the good business which has prevailed thus far this summer, and the outlook is for an increase in prices unless business declines, which it will scarcely do. The market is practically bare of brick all the time, and everything that comes in is delivered on previously placed orders. The price may go higher, though that is, of course, undecided as yet. Many manufacturers who send their product to the Boston market think they might have more money for it, and it seems likely that higher quotations may be announced before the season closes. The reduction in New York did not influence the market in Boston at all, and sales have continued quite as heavy as before, and at quite as satisfactory prices. The weather has retarded making somewhat of late, continuous rains having prevented makers from doing as much as they might have done had the weather been dryer. Most of them have managed to keep going, filling their orders somehow and preventing the market getting entirely bare. Another thing is bothering the makers around Boston, the difficulty of getting labor, Heretofore it has been possible to hire Canadians for the work, but this year things have been prosperous enough at home, so they have stayed there. The result has been that brickmakers have been forced to employ Italians for the work around the yards and they are not nearly as good as the Canadians. Still these influences may result in an advance in price. If it does it will make brick a rather expensive material for use in construction work. Prices now are: New Hampshire culled W. S. brick, $14.50 to $15.00; sewer grades, $11.50; Philadelphia face brick, $24.00.

The demand for drain pipe keeps about steady. It has been rather heavier than usual this summer, as was predicted in these columns last spring. More draining is being done on the farms of New England than ever before. The demand for drain pipes increases accordingly. Manufacturers who make a specialty of this sort of clay stock are selling all they can turn out at profitable prices.

Fireproofing tiles have not sold with any special degree of animation recently. There has been a steady demand all the season and even now it is rather better than it was last year at this time, but for this season, when everything in the building line is on the boom, trade is not quite so active as some manufacturers and others expected. Nevertheless there is enough to keep manufacturers busy and trade is improving slightly, if there is any change. Prices are about as follows: Partition tiles, 2 inches, 4½ cents per square foot; 4 inches, 6½ cents; 6 inches, 9 cents; hall furrings, 2 inches, 3¾ cents; 3 inches, 4½ cents; roofing blocks, 2 inches, 6½ cents; floor arches, 15 inches, 19 cents; 12 inches, 15 cents; 10 inches, 12 cents; 9 inches, 10 cents; 8 inches, 9 cents; 6 inches, 8 cents.

Information from Maine is rather disturbing. Not for ten years has so much rain fallen in July as came down this year, and every industry which is affected by too much water suffered. Chief among these is the brick trade. It has been impossible for some makers to do their work, so much rain has come down. It has poured all day some days, and brick laid on the yards to dry have melted away before the flood. In other instances damages have been wrought which it will be difficult to overcome this year. And this seems all the more disheartening when it is known that there has been a better opportunity to make money in the brick business this year than for many seasons previous. Plenty of demand and chances to sell more than the capacity of the yards when running full. The loss by water is even more serious than it would be otherwise.

New Hampshire has fared some better, but the injury there has been beyond calculation. All yards have had plenty of orders. In fact it has been almost impossible to satisfy the buyers in Boston and other large New England cities who have gone to New Hampshire for supplies. The brick from the old Granite State have a reputation for quality which has been of benefit to the producers during the past few years, and never more so than now.

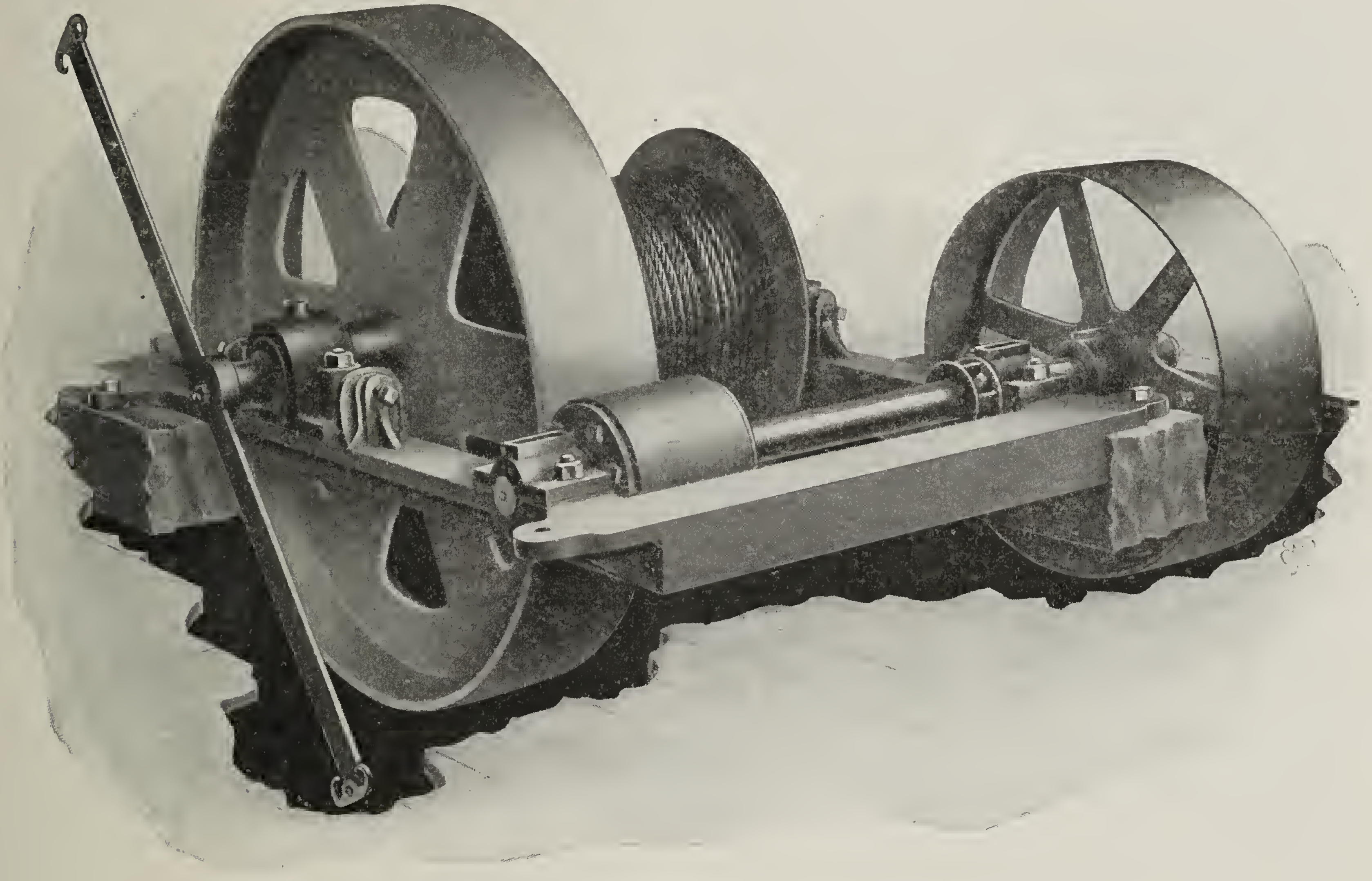
New York city is going into wood paving extensively. All the downtown streets are being paved with preserved wood blocks and the powers that be declare it superior to any other material. It is, perhaps, some satisfaction to know that asphalt is being treated as it deserves, and is being rapidly banished from the downtown New York streets. It has disappeared from some quarters of the city and in others it remains only by sufferance. The wood blocks are at least a step nearer the correct thing in paving, and friends of brick think it will come to that in the end. The objection to preserved wood is that it is so slippery. The horses' feet slide on it as they do on ice, when it is wet, and this season it is wet most of the time. Broadway looks odd paved with anything but granite, but miles of it are being subjected to the wood block treatment with moderately satisfactory results, it is said. Practically everyone but those interested in the business are glad to get rid of the asphalt, which has been a menace to life and limb of both horse and man for years. Asphalt has no place where the traffic is as heavy as it is in New York.

The North Jersey Brick Company, at Carlstadt, N. J., is expanding its business very rapidly. The pits have been extended and an electric pug mill has been installed. The drying yards have been nearly doubled in area and the business has been increased immeasurably in other ways. The shipments have been large and constant all summer.

BURTON.

FRICTION WINDING DRUM STYLE "F."

THIS MACHINE is designed for use in a brick plant and is generally used where the clay cars are drawn up into the building. The machine is self-contained, being mounted on a heavy cast iron base. The drum shaft is provided with a large friction pulley. Five revolutions of the driving shaft will give one revolution of the drum shaft.



Friction Hoist for Brick, Tile and Pottery Plants.

The shifting lever is placed on the end of the drum shaft on the side next to the friction wheel. The bearing on this side of the frame is made with an eccentric in the box, so that a slight motion of the lever will move the drum shaft to or from the small paper friction pulley on the driving shaft, bringing the large friction wheel in contact with the paper friction pulley. On the opposite side of the large friction wheel is the brake shoe against which the wheel is forced when it is necessary to use the brake. The drum is so arranged that the shifting lever can be operated if desired from a distance by means of a rope. It is therefore not necessary for the operator to be stationed at the Winding Drum if it is more desirable to have him stationed at some distant point.

The construction of the machine throughout is strictly first-class. Each and every machine is erected complete and carefully inspected in our factory before shipment. The driving pulley may be placed on either side of the machine, and unless otherwise specified, pulley will be placed as shown on illustration. The machine may also be fitted to be driven with bevel gears if required. The Style "F" Winding Drum is built in three sizes, No. 1, No. 2 and No. 5.

For further particulars address the manufacturers, The American Clay Machinery Company, Bucyrus, Ohio.

A NEW TYPE OF KILN FOR BURNING CLAYWARE.

THAT CLEVER erstwhile Hoosier, F. W. Butterworth, of Danville, Ill., has invented a vertical kiln for burning brick which for novelty, at least, will take the palm. The accompanying description and illustration, taken from the U. S. Patent Gazette, will be read with more than passing interest, we are sure:

Claim.—1. In a kiln for burning clayware, the combination with a vertical chamber in which the clayware may be placed, of means for maintaining a downward draft of heat through said chamber.

2. In a kiln for burning clayware, the combination with a vertical chamber for receiving the ware, means for gradually moving said ware vertically through said chamber, and means for maintaining a downward draft of heat through said ware.

3. In a kiln for burning clayware, the combination with a vertical chamber, of means for moving the clayware upwardly through said chamber, a furnace, a flue from said furnace entering said chamber near its upper end, and means for directing the current of heat downward through said chamber.

4. In a kiln for burning clayware, the combination with a vertical chamber, of means for moving the clayware upwardly through said chamber, a furnace, a flue from said furnace entering said chamber near its upper end, and a fan for drawing the current of heat downward through said chamber.

5. In a kiln for burning clayware, the combination with a vertical chamber, of means for moving the clayware upwardly through said chamber, a furnace, a flue from said furnace entering said chamber near its upper end, means for directing the current of heat downward through said chamber, and a removable lid for closing the upper end of said chamber.

6. In a kiln for burning clayware, the combination with a vertical chamber, of means for moving the clayware upwardly through said chamber, a furnace, a flue from said furnace entering said chamber near its upper end, means for directing the current of heat downward through said chamber, a removable lid for closing the upper end of said chamber, and air passage-ways entering said chamber above the flue and below said lid.

7. In a kiln for burning clayware, the combination with a vertical chamber, of means for moving the clayware upwardly through said chamber, a furnace, a flue from said furnace entering said chamber near its upper end, a fan for drawing the current of heat downward through said chamber, fresh air inlets into said chamber below said flue, and means for controlling the admission of air through said inlets.

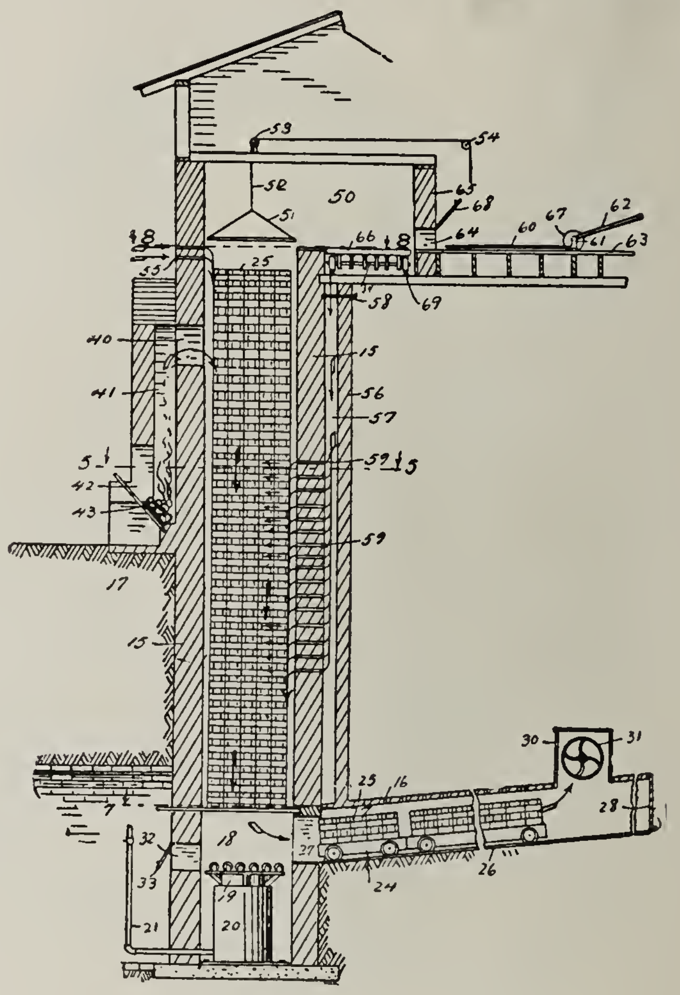
8. In a kiln for burning clayware, a wall forming a vertical passage-way, means for moving the clayware upwardly therethrough, a furnace, a flue leading therefrom into said chamber near its upper end, a wall parallel with the wall surrounding said chamber and forming thereby a fresh air chamber, a damper for controlling the admission of air to said chamber, and openings from said fresh-air chamber into said clayware chamber.

9. In a kiln for burning clayware, a wall forming a vertical chamber, a furnace, a flue from said furnace entering said chamber near its upper end, means for introducing clayware at the lower end of said chamber, means for elevating the clayware through said chamber, and means for removing the burned ware from the upper end of said chamber.

10. In a kiln for burning clayware, a wall forming a vertical chamber, means for moving the ware upwardly through said chamber, means for maintaining a downward current of heat through said chamber, a brick-remover mounted on rollers with rigidly-connected rods for entering the column of brick, and a rigidly-connected handle for operating the same on substantially a level with the top of said chamber on which said brick-remover may be operated.

11. A kiln for burning clayware having a wall forming a vertical chamber, means for moving the clayware upwardly therethrough, means for maintaining a downdraft of heat through said chamber, a room at the top of said vertical chamber with a closed opening therethrough on a level with the top of said chamber, a clayware-remover, and means substantially horizontal chamber leading into the lower end of said clayware-remover may be inserted through said opening in the wall of the room above for receiving a charge of clayware.

12. In a kiln for burning clayware, a wall forming a vertical chamber, means for moving the clayware upwardly therethrough, means for maintaining a current of heat downwardly through said chamber, a track beside the upper end of said chamber, a truck movable on said track and having a platform substantially on a level with the upper end of said chamber, a floor adjacent the position of said truck, and a clayware-remover movable on said floor and truck into position to receive a charge of clayware from the top of the movable column of clayware in said chamber.



Butterworth Vertical Kiln.

13. In a kiln for burning clayware, a vertical chamber through which the clayware is moved while being burned, an elevator at the lower end of said chamber, rollers mounted on said elevator, trucks adapted to run in the lower end of said chamber upon said rollers, said truck being formed of beams adapted to rest upon said rollers and axles and wheels with the wheels sufficiently far apart to run astride the rollers, substantially as set forth.

14. In a kiln for burning clayware, the combination of a wall forming a vertical chamber, a horizontal chamber leading into the lower end of the vertical chamber, means for moving clayware through said combined chambers, means for introducing heat at one end of said combined chambers, and means for withdrawing heat at the other end thereof.

15. In a kiln for burning clayware, the combination of a wall forming a vertical chamber and a wall forming a substantially horizontal chamber leading into the lower end of the vertical chamber, means for moving clayware through said combined chambers, a furnace, a flue entering the vertical chamber near its upper end, and an exhaust fan at the

remote end of said horizontal chamber for moving the products of combustion through said combined chambers.

16. In a kiln for burning clayware, the combination of a wall forming a vertical chamber and a wall forming a substantially horizontal chamber leading into the lower end of the vertical chamber, means for moving clayware through said combined chambers, a furnace, a flue entering the vertical chamber near its upper end, an exhaust fan at the remote end of said horizontal chamber for moving the products of combustion through said combined chambers, trucks for carrying said clayware movable inwardly through said horizontal chamber, and means at the vertical end of said vertical chamber for receiving and moving said clayware upward through said vertical chamber.

17. In a kiln for burning clayware, the combination of a wall forming a vertical chamber and a wall forming a substantially horizontal chamber leading into the lower end of the vertical chamber, means for moving clayware through said combined chambers, a furnace, a flue entering the vertical chamber near its upper end, an exhaust fan at the remote end of said horizontal chamber for moving the products of combustion through said combined chambers, a track within said horizontal chamber, trucks for carrying clayware movable inwardly by gravity on said track, an elevator at the lower end of the vertical chamber in line with the lower end of said track in the horizontal chamber upon which the truck will run from said track, and horizontal rods insertible across the vertical chamber for supporting a column of ware thereon independently of said elevator.

GETS THERE.

The blue bird has a wing of blue,
The red bird one like flame,
Our "Eagle" has no wings at all
But it gets there just the same.

(Mr. Frank L. Hopley, of the American Clay Machinery Company, Bucyrus, Ohio, author of the above, claims that the "Eagle Repress" gets there always. It is never down and out. If, says he, you want the best of presses it must be an Eagle.)

Written for The Clay-Worker.

BRICK PAVEMENTS CHEAPEST AND BEST.

An Interesting Comparison at Syracuse, N. Y., Where Moderate Cost Brick Pavements Have Proven Much More Durable Than High Priced Asphalt.

LIKE MOST of the important American cities, Syracuse, N. Y., has learned from sad experience, that dearest of all teachers, that asphalt pavements are a very expensive luxury. She is also learning in the same way that good brick pavements are durable and inexpensive, as well as sanitary and wholesome, for she has a number of brick paved thoroughfares that, though subject to heavy traffic, are still almost as good as new after more than a decade of service with no cost for repairs. The superior wearing quality of brick paving compared with asphalt is clearly indicated in the cost of repairs during the year of 1904, when the city expended $120.73 for repairing brick streets, and during the same period paid out nearly $10,000 for repairing asphalt streets, though the latter had not been in service any longer than the brick pavements. Notwithstanding this enormous cost for repairs, the asphalt streets are in a deplorable condition a good part of the time. The latter feature is not due to an inferior quality of asphalt, or at any rate, the city has paid for good asphalt pavements. It is pretty clear, though, that the price of asphalt has little or no relation to good pavements, for some of the highest priced asphalt pavements have gone to pieces the quickest.

West Genesee St., Syracuse N. Y. Paved with Brick In 1896.

The brick streets of Syracuse have been uniformly good. This is due, in part, to the fact that home-made brick have been used and an excellent paving brick is made there. Then, too, Mr. James L. Breed, of the New York Brick and Paving Company, has given personal attention to the construction of the brick streets, giving the city engineering department and the contractors the benefit of his knowledge and experience, gained by close study and observation. The contrast in wearing qualities of the brick and asphalt streets of Syracuse is so largely favorable to brick that taxpayers are likely to demand them in the future. In a recent conversation on this subject, Mr. Breed spoke as follows:

"I have no doubt at all as to what will be the future paving material of Syracuse or any other large city which believes in putting down pavements of superior quality in regard to point of durability and sanitary perfection. There is just one paving material which will stand the ravages of time, create little dust, endure the heaviest of travel and promote good sanitary conditions. Brick paving is rapidly coming to the fore in Syracuse, for it has had expensive as well as annoying experiences with its asphalt pavements. To look over the paving records in the office of the city engineer and department of public works will overawe the most advanced observer of municipal management. These records show in part that since 1889, when the first asphalt pavement was laid in this city, a very large sum of money in the aggregate has been paid out for repairs on asphalt pavements, while practically nothing was spent for repairing brick pavements.

"In 1902 the cost of repairing the asphalt pavement was $2,656.40, and nothing was spent on brick pavements. Every one remembers the condition of James, West, Onondaga, State and other asphalt paved streets a few years since, when resurfacing became necessary at a great expense. A good comparison with the disastrous record of asphalt is the brick pavement on West Water street, which is more traveled and subjected to heavier traffic than West Genesee street. Both of these pavements were laid in 1890. Genesee street has been resurfaced time after time, while the brick pavement, which gets the heavy traffic near the freight depots, is today in an excellent condition, as good as when laid, except for natural wear and tear and nothing has been spent for repairs.

"The people of Syracuse have their eyes open and brick pavements are coming into general use. Butternut street is a notable example. It is paved with brick, the work having been recently completed over a stretch of 6,300 feet in length. Syracuse has given asphalt pavements more than a fair trial and it has come very far from making good; while brick has more than proven its superiority from every point of view, both as to durability, smoothness and economy in laying and in matter of repairs."

In 1903, $4,586.46 was spent on asphalt pavement repairs, while absolutely nothing was spent on repairing the brick pavements. Commissioner of Public Works Thompson, in his annual report for 1903, sounds the following note of warning: "As many of the asphalt pavements are rapidly passing into a state of decay, the cost of keeping them in repair is likely to increase from year to year. Every effort has been made to keep the pavements in repair."

In the period beginning in 1900 and ending with 1904, there were 12.05 miles of brick pavement and 6.83 miles of asphalt pavements laid in Syracuse. In 1905 the repairs to asphalt pavements cost $11,775.43 and the repairs to brick pavements only $230.98. Can any one look at this record and say asphalt is less expensive, more durable and a much more desirable pavement than brick?

The best paved streets in Syracuse are those which are paved with brick. Cortland avenue was paved with Nelsonville brick in 1895, at a cost of $2.20 a square yard. It was laid on a six-inch Rosendale cement concrete base with a five-year guaranty. The accompanying cut shows the street as it appeared on June 15, 1906. Up to that date it had had very little repairs and was in first-class condition.

West Water Street, Syracuse, N. Y., Near New York Central Freight House. Paved With Syracuse Brick in 1890. Though Subject to Very Heavy Traffic is a Good Street Today.

The pavement on West Genessee street was laid in 1896; it cost $2.18 a square yard. The guaranty was for ten years It was laid on a six-inch concrete base, and the brick used were made by the New York Brick and Paving Company, of Syracuse.

One of the most remarkable brick pavements of the country is that laid on West Water street in Syracuse. This street leads to the New York Central freight house, and consequently has a very heavy traffic. By actual count, more than 1,500 heavily loaded drays pass over it every day.

This was Mr. James L. Breed's first experience in the brick paving and manufacturing industry. He was contemplating going into the business on a large scale, but before doing so wished to give the brick the most thorough test possible. Therefore, he selected the most heavily traveled street in the city and asked the privilege of laying a brick pavement there after his own specifications, at the low price of $1.87½ a square yard. He was granted the privilege, and after making the necessary excavation to bring the street to its proper sub-grade, it was thoroughly rolled with a five-ton roller. After the base was thoroughly compacted, a sand cushion of one inch in depth was placed and also rolled. On this cushion he first laid a course of hard-burned brick, flat side down. On top of this course of brick was placed an inch and a half more of sand, the top course of brick being set on edge at right angles with the curb. Although this pavement was laid in 1890, without any guaranty, up to June 15, 1906, when the street was photographed, there had been no cost to the city for repairs. The brick with which the street was paved were known as standard wire cut paving brick and were made by the N. Y. B. & P. Co., whose plant was erected by Mr. Breed some fifteen years ago. He has retained the active managament of the business ever since. The plant is located within the city limits, but the clay is brought to it by canal boats from a point a few miles north. The clay burns a pale yellow color, and at high temperatures may be fused to a nearly black mass. Not only does Mr. Breed make an excellent paving brick, but he has gained fame among chemical manufacturers by producing a brick that successfully resists the action of acids and alkalies. For the latter purpose they bring an exceptionally high price and are shipped to the paper, pulp and chemical manufacturing companies throughout the United States and Canada. As previously related in these columns, this extensive trade has grown up largely as the result of the publication in the April, 1891, CLAY-WORKER of a letter from the chemist of the Solvay Process Company, giving the results of a test made on the brick in their soda work. Mr. Breed dates the beginning of his success in the brick business from the date of the publication of the letter in THE CLAY-WORKER. It brought inquiries from paper and pulp companies far and wide. A trial of the brick proves their superiority and Mr. Breed's business has grown until he is now turning out nearly 20,000,000 brick per annum.

Cortland Avenue, Syracuse, N. Y., Paved with Nelsonville Brick in 1899.

J. E. R.

Unquestionably it will take a long time to try the Thaw murder case. It is said the estate is worth $40,000,000.

Another reform wave has been started. The Chicago Federation of Labor has prepared a city ordinance which will force Italian organ grinders to learn how to grind out classical music. The popular music has been bad enough. Why not eliminate all of it except the monkey?

Written for THE CLAY-WORKER.

COST OF MAINTENANCE IN BRICK STREETS LOWER THAN IN GRANITE.

IN DISCUSSING the problem of street paving, which it classes as a complicated one, the American Lumberman, of Chicago, says that city has 1,485 miles of paved streets, including a dozen different kinds of pavements. The first cost of making this pavement is given at $69,200,000. The cost of maintenance is said to be $3,800,000 annually, besides money expended for extensions. Selecting the six principal paving materials used in Chicago the Lumberman gives a table showing the number of miles in use in 1904, the estimated life of each in years, under three classes of traffic, slight, medium and heavy, and the average relative cost of maintenance per mile, the table given being as follows:

		Slight.		Medium.		Heavy.	
	Miles.	Life.	Cost.	Life.	Cost.	Life.	Cost.
Cedar block, on 2-inch plank	625.42	10	$22	7	$33	..	..
Brick, on 6-inch concrete.	80.79	35	13	20	19	10	$33
Asphalt, on 6-inch concrete	220.08	15	14	8	69	..	..
Granite	43.25	50	21	30	30	15	47
Cobblestone, 6-inch	Not given	..	..	15	15	8	23
Macadam	457.63	10	23	6	25	..	..

Leaving aside entirely the question of the fairness and correctness of this report (for our Chicago friends or any others who may be in close touch with the situation to pass on according to their judgment), and considering the matter merely as it stands in this table, there are some interesting facts brought out. One of these is, that when it comes to heavy traffic the only paving material that enters is brick and stone. Another interesting feature about the report is that while granite is given a longer life than brick, it also shows a greater cost of maintenance, the percentage of difference in cost of maintenance in favor of brick being more remarkable on its face than the difference of length of life shown in favor of granite. A further study of the items of cost of maintenance will lead to a conclusion, though it is not mentioned in the report, that this cost covers cleaning as well as repairing. For example, under the head of slight traffic, where the cost of maintaining brick paving is given at $13.00 per mile, the cost of maintaining asphalt at $14.00 and granite at $21.00, while cedar blocks show $22.00. It will be difficult to convince any practical man that it costs more to keep a granite street in repair than one made of asphalt, unless, as suggested, this cost covers that of street cleaning also, which would make the figures harmonize more with logical deduc-

West Water Street, Syracuse, N. Y., Near South West Street, Laid in 1890.

tions, because an asphalt street is easier to clean than one made of granite or one made of cedar blocks. The cobblestone, which show up low in the cost of maintenance, are evidently left uncleaned part of the time, and eliminating them with this explanation, we find that the street which it costs less to clean and keep in repair than any other, is brick.

In its figures on the first cost of making streets, the Lumberman estimates that it costs $2.50 a yard to put down asphalt, $1.38 for macadam, $4.06 for granite and $2.71 for brick, and continuing on this point it says:

"One of the most destructive elements pavements have to contend with is the constant opening of streets for sewers, water mains, gas mains and electric power installation. No pavement can be replaced as it was when originally laid and every time it is broken into shortens its life more or less, according to the way the work is done. For the asphalt pavement gas mains work the greatest injury. A leaky gas main will absolutely destroy the pavement as far as the gas is able to penetrate.

"In paving a city, therefore, the first cost is by no means the only thing to be reckoned with. The cheapest in the beginning is likely to prove the most expensive in the end, and a pavement that must be constantly repaired is a source of perpetual annoyance. Every section should be paved according to its necessities."

Yes, every section of the city should be paved according to its necessities, and the thing that will meet more of those necessities, give the most for the money, and furnish a satisfactory paving under more conditions than any other one material, is good brick, and don't you forget it.

View No. 1—Yard Office at Plant of McKenzie Brick Company.

GRATH PRESSES IN DEMAND.

W. P. Grath, president of the Illinois Supply and Construction Company, St. Louis, Mo., writes that his company is still getting a great many inquiries for the Grath special brick presses, both for clay and sand-lime brick, and for their hand power press to be shipped to J. Rogers, Barranquilla, ber kilns. One of the recent orders is for a Grath special hand-power press and for the Grath down draft continuous chamber kilns. One of the recent orders is for a Grath special hand power press to be shipped to J. Rogers, Barranquilla, press of largest design for making sand-lime brick of Spanish size, 12¼x5⅞x2¾, to be shipped to Chili, South America. They have also just received an order for roofing tile machinery for a Los Angeles, Cal., firm, for making clay shingles, "promenade" and Spanish tile.

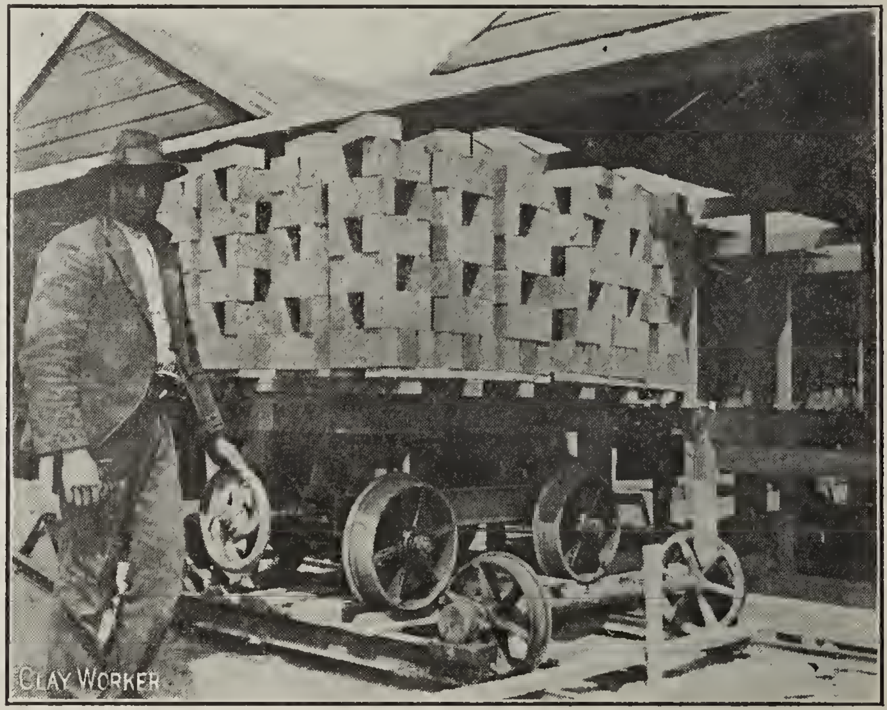
Written for The Clay-Worker.

MAKING BRICK IN THE CRACKER STATE.

OUR READERS will perhaps like to know something about how our southern brethren make brick these days, and that they are up to date the same as our northern mud daubers. Among the eleven large plants in Augusta, Ga., that of the McKenzie Brick Company, of which we will give you a description as well as some cuts of the same. After a very pleasant drive of about three miles from the hotel we entered the yard of the McKenzie plant, and the very first glance will convince one that they are up to date and prosperous, as the yard shows from the neat appearance of everything about the place.

We were received by Mr. J. H. McKenzie, vice-president and general manager, and he, together with their very able and accommodating superintendent, Mr. Burnside, left no stone unturned to make us feel at home and to show us about their plant, which they can do with pride.

They have in all about seventy-five acres of clay land on which their plant is located; the clay is of a splendid quality and ranges in thickness from twenty-five to thirty-five feet, but at the present time they are working from eighteen to twenty feet. They load their clay into cars by means of pick and shovel and then haul it a distance of about 800 feet with an endless wire cable of Mr. McKenzie's own invention, which works to perfection and saves three mules and two boys to drive these animals, and at the same time they are in shape to keep plenty of clay at the machine at all times.



View No. 2—Method of Conveying Brick from Machine to Dryer.

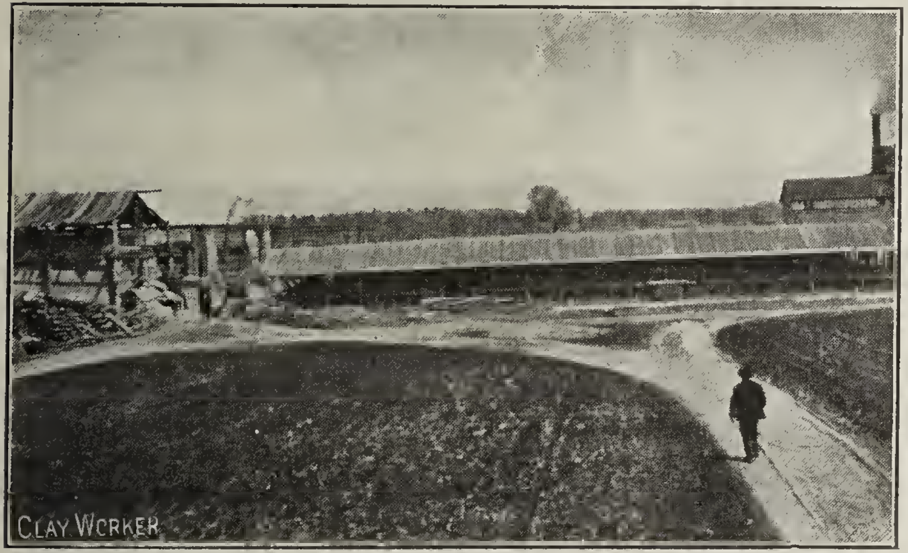
After the clay has been elevated to the machine house it is dumped into a large storage bin, under which is a large granulator which they have installed this season. From the granulator it is fed into an eight-foot pug mill, and from the pug mill it is fed into the machine, which forces the clay into a bar of the proper size, and is then cut into brick by means of an automatic cutting table, and then they are delivered onto the conveying belt, and they are then hacked onto pallets holding about 380 to 400 brick. One man with an elevating brick car (also of Mr. McKenzie's own patent) transfers the brick to the drying sheds, where they are allowed to remain for about six or seven days, when they are ready for the kilns. They are then transferred to the kilns in the same manner. The kilns are all of the clamp type and hold about 400,000 each, and wood is the fuel now used for burning, but they are arranging to change all their kilns from wood to coal, and they will install the Boss system of burning.

They have shed room for about 400,000 brick, and these sheds are kept full all the time, except the few sheds which they are working on—that is, the ones they are taking the brick out of for the kilns.

They give their men a task day's work of 45,000, and they are through with their day's work by 4:30 most every day and have gone home.

The machinery equipment consists of the following: One-hundred-and-fifty horse-power boiler, one-hundred horse-power engine, pumps, heater, etc., one 50,000 capacity stiff-mud brick machine, one large ten-foot granulator, one eight-foot pug mill, rotary automatic cutting table and double-die re-press. Their equipment was furnished by the C. W. Raymond Company, of Dayton, Ohio. The open-air dryer is also the C. W. Raymond Company system.

View No. 3—Machine House and Dry Sheds.



View No. 4—Drying Racks and Clamp Kilns.

The officers of the company are: Charles F. McKenzie, president and secretary; J. H. McKenzie, vice-president and general manager, and Mr. Burnside is the superintendent of the plant. They tell us that they have had a great deal of trouble in obtaining labor, but they are well supplied this season and are working negro women for off-bearers at the machine.

They have a ready market for all the brick they can make and, in fact, they have most of their output sold for the entire season, and the demand for common brick for the last two years has been greater than the output.

Picture No. 1 shows the office of the company at the plant (although they have a general office in town). The gentleman in the center is Mr. J. H. McKenzie, the vice-president and general manager; on the left is Mr. Burnside, superintendent of the plant, and on the right is old Uncle Walker, an old negro, who has been with the McKenzies for years and is one of the fixtures around the brick yard.

Picture No. 2 shows a loaded car of brick ready for the drying sheds, and also the easy method of handling brick from the machine to the drying sheds with the improved elevating car.

Picture No. 3 shows a side and general view of the plant and drying sheds, the sheds being 120 feet in length.

Picture No. 4 shows a side view of the out-door drying sheds and clamp kilns.

Picture No. 5 shows the clay bank, with the endless wire cable for hauling cars in operation; also a rear view of the factory.

This is one of the most modern and best-equipped plants in the State of Georgia, and with the improved methods of handling and the labor-saving devices which they employ they expect to turn out from 9,000 to 10,000 brick this season.

Any one who visits Augusta and is interested in the brick business should not fail to call on these people, as brick-makers are always welcome, and the officers will take pleasure in showing them around their plant.

I. H. C. ENGINES AMONG TRADES WORKERS.

View No. 5—McKenzie Brick Company's Clay Bank.

There seems to be very good reason why machinists and men of related callings are drawn to the line of small powers manufactured by the International Harvester Company, 7 JJ. Monroe street, Chicago. This great company has but recently taken up the building of gas and gasoline engines. Its reputation would not permit it to turn out anything but high class machines. When put to the test, their engines fully meet all expectations. First of all, they are dependable. That fact will be greatly appreciated by small power users. They cannot all connect with line shafting operated from central stations. Individual steam powers for them are too slow and expensive The I. H. C. engines furnish ready power. They are reliable. They furnish power at a moment's notice. They stop the instant the work is done, and all expense stops also. They are, therefore, much more economical than steam or other old style powers.

Another important fact is that the I. H. C. engines are adapted to use alcohol as well as gas or gasoline. This enables power users to operate with greater economy than ever, now that the tariff is off of denatured alcohol.

The I. H. C. engines are made in various sizes in portable and stationary horizontals and in uprights or verticals, thus adapting them in size and style to almost any use.

An advertisement of these engines will be found on page 186 of this issue. Power users would do well to read it and procure the I. H. C. book on the power question before placing orders.

There is really no ned for fretting about the small details of your business—just look after them properly—that's all.

LAND DRAINAGE

BY J. J. W. BILLINGSLEY

AMONG THE TILEMAKERS.

IT WAS the writer's good fortune, recently, to visit the fatcory of the National Drain Tile Company, at Summitville, Ind. The plant was running full-handed and the superintendent reported that this year so far surpassed any previous year. From January 1 to July 1, 1906, they shipped over 600 carloads of tile on order, and are receiving orders daily for more tile. Three cars left the yards on the day of our visit. The Summitville works, it will be remembered, were the first to make a specialty of large tile—from 12 to 30 inches in diameter, and largely supplied this demand of the trade for years. This year has been an exception in the trade of the last ten years. The demand for small tile, sizes ranging from 4 to 6 inches, has been so great that they were delayed in filling some of their orders. They attributed the increased demand for the small sizes as the result of a general drift to more thorough work in tile draining. They have very few small tile on the Summitville yards, though they have on hand some fifty carloads of tile and are running at their full capacity. They have two Taplin & Rice presses, and two Madden machines, with floor space sufficient to dry without hindrance. They have fifteen down draft kilns, six of which are 20 feet, and nine are 26 feet in diameter. It requires about 1,000 tons of coal per month. The following is the average car capacity for the different sizes of tile: 4-inch, 6,500; 5-inch, 5,000; 6-inch, 4,000; 7-inch, 3,000; 8-inch, 1,200; 10-inch, 800; 12-inch, 500; 14-inch, 400; 16-inch, 250; 18-inch, 200; 20-inch, 166; 24-inch, 150.

The Summitville works was the home works of S. C. Cowgill for many years. The works were burned twice, but rebuilt still larger each time, until they were said to be the largest drain tile works in the world. Mr. Cowgill, in the past few years, has taken the lead in building large tile works at Montezuma, Hillsdale and Terre Haute, in this State. The three last named use shale clay, and each of the works are fitted up with the best machinery known to the business. We are informed that Mr. S. C. Cowgill has removed to Montezuma, Ind., where he built himself, in advance of moving, an elegant residence. The son, S. M. Cowgill, resides at Terre Haute. The elder S. C. Cowgill spends much of his time in Mississippi, where he has built and has about completed a large drain tile plant, to supply the lower Mississippi valley with drain tile. We do not understand that the drain tile works in Mississippi are owned by the National Drain Tile Company; only the Summitville, Montezuma, Hillsdale and Terre Haute works. The officers of the company are: S. C. Cowgill, President; S. M. Cowgill, Vice-President; James Luther, Secretary, and L. R. Whitney, Treasurer. The annual capacity of the four works above named is reckoned at 4,000 carloads.

J. A. Reel is superintendent of the Summitville works, to whom we are indebted for much of the information herewith presented to the readers of THE CLAY-WORKER. Mr. Reel informed us that many of the tile from the Summitville works are shipped to Ohio, Michigan and Illinois, besides there is a large demand from various sections in this State.

Twenty years or more ago, the writer was invited by Mr. Cowgill to be present at a corn show, the corn to have been grown on tile-drained land, and the exhibit to be made at the tile works at Summitville. The day was pleasant and there were in attendance a hundred or more farmers and a large exhibit of corn. In going and coming we saw thousands of acres of land unfit for cultivation for want of under drainage. The farm residences were poor, many of them log houses, together with log stables. Today, as far as the eye can see, are fields of waving corn, clover meadows and pasture lands, with beautiful farm homes and large, commodious barns. Now and then one of these farms sells for from $100 to $150 per acre. Ask almost any of the good farmers how this all came about and the reply will be, "Oh, tile drainage did it." So it is, thousands and thousands of acres reckoned to be almost, if not entirely, worthless in the early settling of the country are now yielding abundant harvests.

Hobbs Drain Tile Works is situated at Hobbs, Tipton county, in this State, and is owned by Parnell & Slusser. We found it in full operation. They reported an unusual demand for drain tile. There is money in the tile business now. They have a local demand for their entire output of drain tile. They use a J. D. Fate machine and speak very highly of it. They are planning to build larger kilns and to add to their drying floors, and in this way double their present capacity. They have but few tile on their yards, the demand for tile following up closely their output so far this season. They hope, however, to get ahead in the next two months.

The Fairmount Drain Tile Works has had a good trade this season. The works were recently sold to A. Lindsey, of Marion, Ind., the works to change management July 15. J. F. Morris, of the Brooklyn Tile Works, we are informed, has sold his interest to Mr. Powell, and will retire from the business.

The Orestes Drain Tile Works report a good trade.

Depth of Drains.

In a porous soil, as a rule, the deeper the drain the further it will draw the water. The tendency of water is to lie level in the soil. The farther water has to pass in the soil, the longer time, other things being equal, will be required for the passage. A single drain, if laid deep enough, might in a few days lower the water line to a point that would give no trouble to the growing or cultivation of the crop, but two drains at less depth would do the work in half the time, or in much less time. We have already seen the necessity of laying drains deep enough to add to the area the roots of growing crops can penetrate for food and moisture; yet if we adopt the conclusion that three feet is the least possible depth where an outlet can be had, there may be a question still, whether in very open soils a still greater depth may not be expedient to be compensated by increased distance apart of the drains.

Drain Tiled Out.

Looking out from a car window over a wide stretch of country, covered in most part with waving corn, a fellow passenger remarked, "A magnificent sight." "Yes, yes," said another; "but I have seen all this covered with water, and here and there buttonwood ponds." He went on to say: "I knew a man, many years ago, who lived not more than three miles from where we are now, who owned 160 acres of land, about like this land when in a state of nature. He had cleared up a part of it, but his crops, year after year, were drowned out and he was badly in debt. He couldn't sell and could hardly live. An agent for tile mill outfits came along and persuaded him to buy one on time, and he built a shed and set up the machine and was soon making tile—not very good ones, but they served his purpose.

He did not meet with a ready sale for tile at first, and used most of his first make himself; and then he began to grow big crops and his neighbors caught on to the advantages to be had from tile draining. His tile trade grew until he had to enlarge his works. To make the story short, Joe Benson tiled out of debt, bought more land, made more tile and continued to grow better crops until he is one of the wealthy men of the county, and such men have made the country we have been looking at." Which is true, very true.

One Example.

Every operator in the soil concedes the importance of draining the land, but he replied that that would never pay on lands year after year, wasting annually, by loss of crops, twice the amount required to thoroughly drain. A most industrious German, in this vicinity, cultivated about eight acres for three years, barely making a living; his soil was an excellent loam, but two-thirds of it was so "spongy" that he could never get it plowed until all his neighbors had their crops planted. Driving past one day, I hailed him, asking him why he was so late getting in his crop. When he explained that if he had begun sooner his horses would have "bogged" so he might never have got them out again. I suggested draining theland, but he replied that that would never pay on a leased place; he had started on a ten years' lease, which had only seven years more to run, and that he would only be improving it for his landlord, who would allow him nothing for improvement. After some further conversation, I asked him to jump into my wagon, and in ten minutes we alighted at a market garden that had, six years before, been just such a swamp hole as his own; but then (the middle of May) was luxuriant with vegetation. I explained to him what its former condition had been, and that the investing of $500 in drain tiles would, in twelve months, put his in the same condition. He being a shrewd man acted on the advice, and at the termination of his lease purchased and paid for the eight acres $12,000, the saving of six years on his drained garden.

PETER HENDERSON.

WAY DOWN IN MAINE.

Hugh O'Brien, of Brewer, who a few months ago sold his brick plant to a corporation composed of John E. Littlefield, Dr. Tibbetts and Mr. Brooks, of Orrington, Me., has opened up, in company with his brother, Patrick O'Brien, a new brickyard. Already two mud machines are in operation and preparations being made for the establishment of some modern methods. Patrick O'Brien will be general manager.

William Burke, Jr., of Brewer, who has taken his father's brickyard, is thinking some of increasing his output by the addition of some new machinery.

Dr. H. H. Hanson, of Bangor, still entertains the idea that a modern brick plant should be established upon his clay deposit, near Hermon Junction, of the Seaport railroad.

Martin Dunn, of Brewer, one of the expert brick burners in the State of Maine, has gone to Waterville, where he will burn several kilns for Horace Purrington & Co. John Flanigan, of Pine street, Bangor, one of the old-time brick burners of the section, has opened up a new yard at Dover, Me. Mr. Flanigan has two sons whom he expects to fit out for the brick business.

Joel Clark, of Hampden, another old-time brick burner, has opened up a new yard in New Limerick, Aroostook county, Maine.

Mike Hartry has gone to Ashland, Maine, to work for Daniel Mullen in the new yard at Squawpan Lake.

THE INFLUENCE OF ABILITY.

Circulation, artificially forced, has the disadvantage that many of the people who get a paper by reason of premium or other ulterior inducement are not the kind of people who take advantage of the information the paper contains. They get their information second-hand from people who do read. They are not in the habit of getting ideas from printed pages nor of taking the initiative in the adoption of new methods and devices. ONE GREAT SERVICE THE WELL EDITED AND PROPERLY PUSHED TRADE PAPER PERFORMS FOR THE ADVERTISER IS TO ATTRACT, INFORM AND INFLUENCE THOSE PIONEERS IN ANY LINE OF BUSINESS WHO SEEK THE BEST, ACT UPON THEIR OWN JUDGMENT AND FINALLY DRAW THEIR LESS PROGRESSIVE NEIGHBORS AFTER THEM.

Karl Dignowity, a German chemist, owns a tract of land at Denison, Texas, on which there is a large deposit of white sand of a very superior quality suitable for the manufacture of sand-lime brick. Mr. Dignowity would like to interest parties with capital to co-operate with him in the erection of a sand-lime brick plant. He, himself, has had considerable experience in the manufacture of this product in Germany, but has not enough capital at his command to erect a plant. The deposit is on the line of the Missouri, Kansas & Texas R. R.

Written for THE CLAY-WORKER:

LARGEST SAND-LIME BRICK PLANT IN THE WORLD.

FROM A GERMAN trade paper we take the following particulars regarding the sand-lime brick plant of R. Gutman, located near Berlin, Germany, and which is unquestionably the largest plant of this kind that has so far been established in any country.

The lime used is burned on the plant in two large kilns, the lime rock coming by water from the quarries at Ruedersdorf. The sand is taken from their own land nearby, and is hauled from the bank to the machinery in railroad cars. The power is furnished by a 800-horsepower engine, and the factory is operated continuously day and night.

There are twenty brick presses in use in this plant, each of which has a capacity of 1,400 brick per hour, which would give the plant a capacity of 280,000 brick if the machinery were operated ten hours per day, as in most of the plants in this country. This German plant runs day and night, however, so it has the unheard-of capacity for a sand-lime brick plant of 560,000 brick, or over half a million every twenty-four hours, which makes the plants in this country seem very small, indeed. One of the twenty presses is arranged for making a larger size of brick, which they call "Cloister brick," but the dimensions are not given.

The green brick, as taken from the presses, are loaded on cars in the usual way, but instead of sending each car as filled to the cylinder, they are made up in trains of thirteen cars each, and each train is hauled to the cylinder by electric power. There are about fourteen hardening cylinders lying side by side. These are each 65 feet long, but are a little less than 6 feet inside diameter, as they load only 650 brick on each car instead of 900 to 1,000, as is the custom in this country. The brick remain ten hours in the cylinder under a steam pressure of "nine atmospheres," which would figure about 135 pounds, and is somewhat more than is generally used in this country.

The brick are transported to Berlin by water, and the transportation goes on day and night, winter and summer, as during cold weather the waterway is kept clear of ice by two ice-breakers. The Gutman fleet of boats for the transportation of the brick, consists of twenty-two flatboats with the necessary steam tugs, the boats holding from 70,000 to 100,000 brick each. At four unloading stations in Berlin the company has 110 brick wagons, which have removable iron wagon-bodies. These wagon-bodies are lifted off and carried by electric power onto the boats, where they are loaded with the brick, then taken back and replaced on the wagons, all of which looks very much like American up-to-date methods. The brick are sold delivered at the job, but the price obtained for them is not given, nor the cost of production, both of which would be very interesting items to the brick trade here on so large a plant.

The Gutman plant employs 500 laborers, who are provided with quarters at the plant. Most of them are married, and each family is provided with a cottage containing two living and sleeping rooms, kitchen, laundry, cellar, and a small garden in front. For these accommodations each family pays rent at the rate of three marks, or about 75 cents per week. The unmarried laborers are provided with a sort of barracks, where each gets his bed and night's lodging for ten pfennigs, or 2½ cents, and his midday dinner for thirty pfennings, or 7½ cents. The rate of wages paid to these men is not stated, and would also be an interesting item. The water for the plant is furnished by a water tower, holding seventy cubic meters, the water coming from a spring, and is pumped to the tower, and then piped wherever needed, providing running water for the entire plant.

Written for THE CLAY-WORKER:

PACIFIC COAST NEWS.

THE MONTH OF JULY marked the real beginning of permanent reconstruction in San Francisco. During that month 470 building permits were issued for improvements of an estimated value of $3,514,000. Actual contracts were let to the number of 132, aggregating in value $1,282,506. During the month work was begun on eighty-six permanent buildings.

So far, the building situation has been characterized by an immense number of reinforced concrete buildings, mostly of the skyscraper type, which have been built ON PAPER, and by a large number of substantial brick buildings upon which actual work has been begun, or for which permits have been secured. During July fifty-eight permits for brick buildings at an estimated cost of $1,285,550 were issued. During the same period seven permits for concrete buildings, estimated to cost $210,380, were issued. This would seem to indicate that as far as actual construction work is concerned, the brick men have little cause to fear any dangerous invasion of their field by the concrete men.

The first permanent building completed in this city since the big fire was a three-story brick structure at the corner of Jackson and Sansome streets, owned by Henry P. Santag. This building was completed on July 21, less than a month after the new building ordinance went into effect.

The labor situation is causing some little uneasiness to brick men, and several strikes of more or less importance have occurred at the brickyards within the last two weeks. A strike at the Oakland brick plant of N. Clark & Son, interfered with work there for several weeks, and was finally settled by the company granting most of the demands of the men. A strike at the yards of Gladding, McBean, & Co., at Lincoln, has just been ended in a somewhat similar way. It begins to look as though the laborers were going to demand a good share of the profits which will accrue to the brick interests as a result of the big demand for brick for rebuilding purposes, and, if the present scarcity of men continues, this demand is likely to be satisfied.

The Monadnock Brick and Tile Company has been incorporated in San Francisco with a capital stock of $150,000, $1,000,000. The leading incorporators of the new company are J. A. Deneen, F. H. Hilbert and Adolph Feist. Mr. Deneen is a well-known contractor, but the other stockholders are new men in the construction line. The incorporation of this company has attracted considerable interest, as all three of the leading stockholders are friends of Mayor Schmitz, and are supposed to stand very high with the present city administration. In this age of political "graft" there is naturally some speculation as to whether or not contractors who patronize the new company will be favored when it comes to enforcing the new building law.

The Carquinez Brick and Tile Company has been incorporated in San Francisco with a capital stock of $$150,000, by O. H. Harrison, J. W. Butler, D. J. McKay, W. Cocks, J. C. Raas, G. W. Lane and H. W. Smith.

The Carnegie Brick and Pottery Company, with yards at Carnegie, Cal., which before the fire had its San Francisco office at 328 Montgomery street, has now secured excellent offices in the Montgomery block at the corner of Montgomery and Washington streets.

The California Brick and Clay Manufacturing Company has been incorporated in San Francisco with a capital stock of $500, by W. F. Barnes, J. G. Treanor and W. H. Spaulding. The company has taken over a plant at Antioch, Cal., and will manufacture sewer pipe, electric conduits and facing brick.

The Continental Fireproofing Company has been incorporated in San Francisco with a capital stock of $10,000, by T. C. Cairns, H. B. Windsor, W. T. Hess, E. B. Wilson and I. Harris.

The Winsor California Pottery and Terra Cotta Works have secured a lease on a valuable location at the southwest corner of Fifth and Bluxome streets, San Francisco.

An assessment of $10 per share has been levied on the capital stock of the Holland Sandstone Brick Company, of San Francisco. This company has an extensive plant at Antioch, Cal., and furnished the sandstone brick used in the Monadnock building on Market street.

Among the larger of the brick buildings planned for early construction in San Francisco are the following: A brick warehouse building to cost $80,000, located on Brannan street near First, owned by the Warehouse Land and Improvement Company; the Alto Building, an eight-story class A structure, 23x69 feet, to cost $90,000, owned by United States Senator Perkins; a four-story stone, brick and terra cotta building, on Third street near Market, owned by Dibert & White; a six-story and basement class B building, to cost $75,000, at the corner of Mission and Fourth streets, owned by Mrs. E. K. Latham; a seven-story brick and stone building at the southeast corner of Post and Stockton streets, owned by W. H. Demming; a four-story brick building, 85x65 feet, at the corner of Dupont and Commercial streets, to cost $80,000, to be occupied by a Chinese bazar; a four-story class B terra cotta and glazed brick building, on Market street near Fifth, to cost $30,000, owned by Deck Bros.; a three-story and basement brick and steel building, at 220 Golden Gate, owned by the Improved Order of Red Men; a five-story brick building, on Post street, near Jones, owned by Geo. Robins; the Alcazar Theater building, in the southwest corner of Sutter and Steiner, to cost $150,000, to be built entirely of brick, steel, terra cotta and marble; a seven-story brick building at the corner of Mason and Powell streets, to cost $100,000, owned by A. Harshell, and a two-story brick building at the corner of Golden Gate and Van Ness avenue, to cost $20,000, owned by Henry Kahn. Plans for these buildings have already been drawn and in many cases permits have already been secured. Other work for which plans are now under way include the rebuilding of the Palace Hotel at an estimated cost of $3,000,000; the reconstruction of the City Hall and the building of a number of Federal and State structures.

The Estacada Brick and Tile Plant, at Estacada, Ore., has commenced operations, with a capacity of 20,000 bricks per day. Within the last sixty days the company has invested $20,000 enlarging and improving the works.

Articles of incorporation have been filed by V. J. Thomas, C. M. Bayne and A. J. Frank, for the Tonque Pressed Brick, Tile and Improvement Company, with a capital stock of $300,000. The place of business will be Santa Fe, N. M.

C. E. Elwell, of Martinez, Cal., has secured a patent on a machine for cleaning brick. The machine is known as Elwell's Patent Brick-Cleaning Machine, and will clean and smooth 5,000 brick per hour. Five men are required to operate it, and it is constructed on wheels for easy moving from one location to another. Mr. Elwell reports having already secured several contracts.

F. C. Owens, C. C. Buffington, O. L. Blinn and O. I. Wilson have purchased the plant and interests of the Whittier Brick Company, at Whittier, Cal., and are preparing to supply all demands. New machinery is being installed and the yard improved. F. C. Owens resigned his position with the Murphy Oil Company and has assumed the management and bookkeeping for the new firm.

The Alta Lime and Brick Company, of Redding, Cal., is now burning its first kiln of brick at the yards. The brick for the Redding City Hall will be ready soon. The company has been purcnased by Hammon & Hill, who will expend $20,000 in improvements.

It is reported that one of the largest brick plants in the country is under projection at Eckley Station, Cal. C. J. Dunton will be the manager of the new concern, which will make at least 100,000 bricks daily. SUNSET.

San Francisco, Aug. 2.

Steffey & Findlay, of Hagerstown, Md., dealers in coal, lumber, cement and lime, advise us that they have a fine deposit of shale at that place and have decided to establish a plant for the manufacture of brick, both clay brick and sand-lime brick.

CORRESPOND-ENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

A Familiar Voice From Across the Water.

Friend Randall: I am at present with my family at the Asbury Park of England. It is called Blockpool, and is very similar to Asbury Park and Atlantic City, N. J. As usual, I have visited one of the brickyards here. It is owned by J. Fieldings & Sons, the wealthiest and most up-to-date brick manufacturers in England.

We are booked to return to America August 30th, via Montreal this time. I am very busy with my kilns and have just sold another to the Mira Brick Company, Sydney, Nova Scotia. HERVEY HAIGH.

Missouri Fire Brick Shipped to Many Points.

Editor THE CLAY-WORKER:

We herewith send you check for $2.00 to renew our subscription to THE CLAY-WORKER. Business is good with us. We are shipping our fire brick into Northern Minnesota, West to the mountains, South to the Gulf and East into Pennsylvania. If you are ever out in this part of the country we would be more than glad to have a call from you. Have you any of the knives left? I lost mine and miss it so much I will have to have another.

F. A. WHITE, Manager V. F. B. and C. Mfg. Co.

Speed and Capacity of Brick Cutting Machinery.

Editor THE CLAY-WORKER:

I would like to take issue with our esteemed friend, Marrion W. Blair, on the brick cutter and its speed. He says first, he doesn't care to get into any disagreeable controversy with Mr. Bensing I think from the personal tone of his letter to Mr. Bensing, he is more than anxious for a discussion of the same. He makes the broad assertion that Mr. Bensing never saw a cutting table cut 500 brick per minute. How does he know this to be true? Does he suppose for one minute that Mr. Bensing never saw a Chambers cutter at work? We do not doubt his word in the least when he says he has seen the Chambers cutter cut 500 per minute; yet why does he believe that Mr. Bensing never had the pleasure of seeing one of these "Twentieth Century Wonders" perform? I take it for granted he is alluding to Mr. Bensing's side-cut table, as he calls it, the "Wooly Worm," and says Mr. Bensing throws up his hands at the idea of a bar of clay traveling 28 miles in 10 hours. Now I firmly believe if he could put a side-cut bar of clay behind Bensing's side-cut table traveling 28 miles in 10 hours, this table would make it into good square brick. How many would you have in side-cut brick, cut 2½ inches thick, if the bar of clay traveled 28 miles? You would have about 950,000 brick, or about three times the amount Mr. Blair speaks of. I have been using Bensing's side-cut table for over seven years and have never seen it get clay too fast to make perfect brick. When we cut our bar of clay off at the die and tighten the friction enough to run this off the table when we are through running, then the table runs up to the speed of the machinery and chops off that 12 feet of clay at a rate exceeding 500, every brick perfect. He also says the arms are not rigid. When they are cutting they are rigid, as they cut hard against the guide going and coming, until the cutting arms are free above the guides; then they are free of the bar of clay and no danger of hanging up and "flipping" one brick on top of the other, as he says. Again, if a wire breaks it can be renewed without stopping the table. The trouble he refers to about the wires flipping the brick up on top of the others is caused by the friction not being tight enough and the bar of clay sliding ahead on the table. Get the friction to the right tension, give it the clay to cut, and it will cut it and cut it right. Same way with Chambers' cutter; if the regulating belt is too tight it will pull the bar apart and run up to the full speed of the shaft. On the other hand if it is too slack the bar will push through the reel and it will not revolve to cut it. Chambers' cutter is all right. Any one who has ever worked one knows it is all right and a good cutter. I can say fully as much of Bensing's side-cut, "Wooly Worm," as I have had the pleasure of working both kinds. We might ask Mr. Blair if he has ever worked a Bensing cutter in one of his yards? If not, would like to ask if he has ever seen one in operation? If not, then I would like to have him run out here in 1907, when he visits the great Jamestown Exposition at Norfolk, and I will show him a Bensing cutter that has been in successful operation for seven years, and stands ready for more clay at all times, as it seems to be unlimited.

Suffolk, Va., July 30, 1906. H. L. JACOBS.

The Chicago Situation.

Editor THE CLAY-WORKER:

The decline in building activity due to the summer let-up continues, and there will not be anything like the busy period that marked the first of the season of 1906 until well into September. Still the material dealer has no ground to complain, for there is more doing in the dull period this year than there was last, and last year was no slouch in Chicago, either. Chicago, according to report from roundabout, however, can't take much unto herself for righteousness on that score, inasmuch as New York City is the only one in the country that doesn't show an increase month for month this year over last, even into the dull season.

The dealers are still kept busy getting out material pledged on earlier orders and the brickmakers are so busy it's doubtful if they have time to stop to realize that "dog-days" are really upon them. Only there is no longer the rush of orders and the necessity of figuring out one estimate in lightning order so as to be ready for the next.

The number of permits issued weekly by Chicago's strenuous building commissioner, the redoubtable Peter Bartzen, shows the falling off in actual business. From the three hundred permits issued during the hottest of the rush, the number has dwindled each week until in the past few weeks it has gone from 149 to 135 to 111 to 110. At that the month of July, 1906, closed with a record of 934 permits for buildings estimated to cost $7,849,960, as against July, 1905, with a record of 768 permits, representing an estimated cost of only $5,778,390.

The real estate market is, of course, "off" during the hot season, but a slight boom was felt within the past few days, and for a very curious reason. This movement, it is calculated, is bound to have something of a reaction which will affect the building market. The cause to which the movement is generally attributed is nothing else than the recent failure of the Milwaukee Avenue State Bank, following the systematic looting of its president and cashier. This bank was in a poor district and was patronized largely by small depositors on the "savings side." The disaster to these unfortunates has been heeded by similar depositors in other institutions, and there has developed a decided inclination on the part of the small investors to take their money out of the banks and put into something they can see, namely, real estate.

This has brought undeserved loss of business to a number of banks, doubtless, but it has stimulated the real estate market a trifle. The small investor in Chicago, however, has pretty well learned the lesson of steering clear of tying his little money up in unimproved property, and therefore the tendency is to erect homes on which a mortgage will be laid to be paid off with future savings, or in the cases of still smaller investors to put their savings into ready built homes sold on the installment plan. Either way this stimulates the demand for building—small homes and small apartments, to be sure, but then, as the Canny Scot says, "Monny a little makes a muckle."

The Consolidation of Hydraulic Press Brick Companies.

A decided ripple in the pool of midsummer stagnation was caused the latter part of last month by the announcement that fourteen large press brick companies, of which one of the most important is the Chicago Hydraulic Press Brick Company, with offices on the third floor of the Chamber of Commerce building, had been organized into one great company, with headquarters in St. Louis. The capital stock of the reorganized corporation is $10,000,000. Twenty-eight brickyards are now controlled by the reorganized St. Louis Hydraulic.

The reports from St. Louis were confirmed here by E. C. Kimbell, the assistant secretary-treasurer and general manager of the Chicago Hydraulic Company. Mr. Kimbell is known better to his friends as "the busiest man in Chicago," and it is hard to convince some of them that he had not been an important factor, if not a prime mover in the new scheme. He, however, merely shook his head and smiled the same old genial smile before getting busy again, and they were constrained to interpret the reply as negative.

All the companies included in the new incorporation have been affiliated in a business way heretofore, and it is explained that the move is really only one of convenience, made in order to facilitate administration. Heretofore there have been necessary quarterly meetings of fourteen separate boards of directors, and the machinery was more or less cumbersome—i. e. the administrative machinery. Now this has been done away with and one board of directors will direct the entire industry. The capital stock of the St. Louis Hydraulic Press Brick Company has been increased from $3,500,000, and is being issued in exchange for the old stock of the erstwhile subsidiary companies. H. W. Eliot is to be president, and George H. Baker, the secretary-treasurer of the company.

As for the so-called brick war, there is little change in the situation. Common brick are being sold at various prices. Some are holding out for a net average rate of $5 per thousand. Others are selling their product for $4.75 straight. Still others—though these are far in the minority—are selling for less, below cost. The situation is summed up something in this way by a man familiar with the details of the local market:

The fall in price is the natural effect of an increase in the productive capacity of Chicago. The demand, to be sure, has been brisk, but still it is estimated that the supply exceeds the demand by about 26 per cent. Under these conditions it is small wonder that the price has fallen.

SCRIP.

Written for THE CLAY-WORKER.

A NEW BRICK PLANT IN JERSEY.

THE PLANT of the Independent Brick Company is located midway between Trenton and Bordentown, N. J., on the Camden and Amboy division of the Pennsylvania railroad. The plant covers an area of five acres of land, and is surrounded by four hundred acres of the best of clay land. Clay is to be had on all sides at a depth of twelve inches, and the bank can be worked to a depth of eight feet.

There will be a pump house located to drain the clay pit. Clay will be taken from the pit in cars, made of steel, by means of a friction hoist. The tramway will also be constructed of steel. The entire building for the purpose of storing clay will be of concrete and steel. The arrangement for distributing clay for storage is far in advance of the many ways for storing clay. All buildings are constructed of concrete and steel below the floor lines; and of brick and steel above the floor lines. The entire plant will be under cover, and the storage, machine house, engine room and dryer will have especially designed steel trusses for the roof covering. The structural iron and steel throughout the entire plant is designed by Newton K. Bugbee, of Trenton, N. J. The roofing will be furnished by the well-known firm of H. R. Sell Company, Trenton, N. J. The dryer roof will be of the "Ransome System" of reinforced concrete, at a thickness of six inches. There will be a battery of ten down draft kilns of the "Bushong Dryer," and in connection with the kilns will be the underground ducts leading to the Chambers Waste Heat Dryer. The dryer is of the latest improved pattern. It will have twelve tunnels, each 110 feet long, with regulators to regulate the heat in each tunnel. There will also be a storage at each end of the dryer. Also in evidence will be "Heavy Duty Corliss Engine," 16x36, for the purpose of driving the clayworking machinery, and a 14x36 "Girder Frame Corliss," to drive the 60 k. w. generator. This generator will furnish electric power for the motor-driven fans and blowers; and the entire plant will be wired for electric lighting.

The boilers are of the tubular type, placed in a battery of four, each boiler capable of developing 100 h. p. The power house will be well lighted and ventilated and will be complete and thoroughly up-to-date in every respect.

The flooring in each department will be of concrete, cement finish. The process of making brick will be the "stiff tempered process" on Chambers machine. There will be a friction hoist, granulator, disintegrator, conveyor, pug mill, brick machine and repress.

The output at factory will be 30,000,000 bricks per annum. The bricks are placed on cars, at the machine, and transferred to the dryer; after the bricks are dried, the cars continue to the kilns, where the bricks are placed for burning. They have a depressed siding for the purpose of shipping by rail, also a water way, so as to ship by boat. The plant was designed by Chambers Brothers & Company, Philadelphia, and fitted complete with their machinery. The erection of the plant is being done by their construction engineer, Mr. William H. Merkel. The plant will have fire apparatus and a trained fire department among the employes, for the purpose of fighting fire. The construction of the entire plant is practically "fireproof."

The officers of the company are: President, Senator Lewis A. Thompson, Somerville, N. J.; Vice-President, John Maddock, pottery manufacturer, Trenton, N. J.; Treasurer, Peter G. Vanzandt, director Second National Bank of Jersey City, Trenton, N. J.; Secretary, Frederick L. Hume, attorney, Trenton, N. J.; general manager, Holmes S. Green, Trenton, N. J.

BETTERMENTS PROGRESSING.

Masons are busy erecting a new office building for The American Clay Machinery Company, Bucyrus, Ohio, which will be more adequate to the demands of the business. Bricklayers are also completing a big building to be occupied exclusively as a clay testing department. This building will contain machinery and appliances for making tests of clay by all the various processes. There will also be dryers and kilns. The foundations are being put in for an extension to their already large foundry, which will double its capacity. These improvements are made to meet the demand for greater capacity and are a direct result of the excellence of their machinery, which has made an ever increasing demand.

BRICK PLANT BLOWN UP BY DYNAMITE.

The Wyoming Valley Brick plant, of Wilkesbarre, Pa., located in the Keyser Valley, was blown up by dynamite and the machinery wrecked recently during the night. It appears that dynamite was placed directly under the machinery. The latter was destroyed. The damage is about $1,500. Lewis Tisch, of Wilkesbarre, is president of the company, and Thomas Dunn, treasurer. The plant was paying a neat dividend to the stockholders. It is the intention to replace the machinery.

ADVANCE IN PRICE OF CARBONATE OF BARYTA.

Gabriel & Schall, of New York, N. Y., advise us that, owing to the action of the Treasury Department relative to the increased duties on Carbonate of Baryta, which go into effect at once, the price on this material has been considerably advanced.

Written for The Clay-Worker:

PITTSBURG AND WESTERN PENNSYLVANIA BRICK NOTES.

BUILDING, which has been held back so long this summer on account of labor troubles, has at last taken the spurt that has been longed for for so many months, and is making rapid strides to equal the record made last year. Authorities are of the opinion that the city will be able to do this, but it means that a large amount of work will have to be given out, for this year so far is about $10,600,000 behind 1905. To be exact, for the first seven months in 1905 the contracts awarded amounted to $52,831,000, while for the corresponding period of this year, they only amount to $42,236,000. It might be added, however, that the last three weeks have made astounding jumps over the corresponding weeks of 1905.

During the talks that the writer has had with many of the largest brick manufacturers in this city and vicinity, they have been almost unanimous in stating that their plants are busy, and many of them in fact are working them to their utmost capacity. This is true both of the fire and building brick plants. Many of the steel companies are relining their blast furnaces and stoves, and there are an immense number of coke ovens being built in the Connellsville and Pittsburg coking districts, so that there is an excellent demand at this time of the year for these hard burned brick. The paving and vitreous brick people are also getting their share of the business, and are well satisfied with the conditions.

Fireproofing is in excellent demand, and there are many large orders still coming in from all parts of this territory for shipment as soon as possible. This is occasioned by the fear that builders have had that should they start the construction of a building the labor troubles might indefinitely hold the work in abeyance. The fireproofing people, as well as the building brick manufacturers, have prepared for this during the dull period, however, and had large stocks, sufficient to supply all demands, on hand, and there is but very little delay in executing orders.

Prices have been very irregular, and with the exception of common building and pavers, have been fairly well maintained. There has been a marked decline in the market quotations of the latter named qualities in the past month, and a rise is now looked for at any time.

The stockholders of the Harrisburg Clay Company, of Harrisburg, Pa., held a special meeting on the 23d of last month, and decided to increase the capital stock from $25,000 to $50,000. There will be extensive improvements made at the plant near South Mountain, Cumberland County.

Hutson Brothers, of Pittsburg, who, with John Starkey, Miner, Ohio, purchased the brick plant at Salineville, Ohio, formerly owned by H. A. Thompson & Co., are having the plant overhauled, and many improvements made, with a view to starting the works up the latter part of this month.

D. C. Foltz, of Dunbar, Pa., has started the construction of a new brickmaking plant at Pechin Station, near Dunbar. The clay from which the brick will be made lies in an immense bed on the east side of the proposed works, and will be reached by a large cut, over which a concrete bridge is being erected. Shipping facilities will be the best, as the location is reached by the N. H. & D. R. R., which connects with the P. R. R., while the B. & O. will build a siding to the works. The main building will be 40 by 90 feet, and will contain the most modern and improved machinery. The plant will be mechanical in every detail, and a fine modern power house will be one of the features. At the start, the plant will have a capacity of 10,000 brick per day, although this will be increased as occasion may demand. The supply of fire clay is practically inexhaustible, and it has been discovered that under the bed of common clay there is a deep bed of fine white clay, that can be used for the manufacture of fire brick, although this branch of the business will not be taken up at the present time. Shortly after the completion of this plant we will illustrate it in these columns and give the details of the construction and the equipment.

The Niles Fire Brick Company, Niles, Ohio, has made extensive improvements at the plant there, arranging, through the construction of a bridge that the railroad company can drop cars by gravity to the works, and to unload the cars by dropping the materials from the top, thus doing away with the help of many men. The bridge that has been constructed is 21 feet high, 620 feet in length, and is constructed entirely of reinforced concrete. A concrete wall has also been constructed to protect the plant from the water in the mill race.

The Dixon Run Land and Improvement Company, of Philadelphia, Pa., is representing a number of Philadelphia capitalists, who have made all arrangements for the construction of a brick plant at Clymer, Indiana County, Pa. The plant will be erected this summer and will cost about $80,000.

The C. P. Mayer Brick Company, Bridgeville, Pa., has been awarded the contract for 550,000 common brick and for 150,000 face brick to be used in building the addition to the Woodville Hospital for the Insane. It might be of interest to say a few words about the company that has this order, which has just built this plant where it was predicted it would be a failure. C. P. Mayer, the active and financial head of the concern, says that until recent date face brickmaking in the Chartiers Valley was not possible because the required shale could not be found, and as clay, in common brickmaking, could not be vitrified, it was therefore not suitable for face brick manufacture. It was well known, however, that carbon and soluble salts in their various forms existed in all of the shales found in the Chartiers Valley to such an extent that many who have tried to make face brick have gone bankrupt, and others have failed at heart. After experiments covering a period of three years, C. P. Mayer discovered a process of manufacture whereby the difficulties were overcome, and spent about $75,000 in the equipment of his plant at Bridgeville, where he manufactures face brick, pavers and common brick.

The Harbison-Walker Refractories Company's works at Manorville have been closed down for repairs and improvements, and will probably resume in about three or four weeks. The management has assigned a large number of orders to this plant for execution in the fall.

X. Wittmer, president of the American Natural Gas Company, and the principal owner of the Wittmer Brick Company, operating a plant at Wittmer Station, Pa., is spending a vacation in Paris. He will return to Pittsburg about the first of September. He is one of the best known brick manufacturers in the State, having been in the business for many years, and formed the Western Pennsylvania Brick Exchange, with George H. Albertson and Edward McGraw, both of whom have practically retired from active interest in the brick and clayworking business.

George H. Albertson, who for many years was prominent in the brick business in Pittsburg and vicinity, has retired from active interest in this industry. He is, however, one of the largest stockholders in the Duquesne Fireproofing Company, of Pittsburg, which concern he organized, and also superintended the construction of their fine large plant. He also built the plant of the Booth & Flinn Brick Company, on Rook's Hill, Pittsburg, which concern, and also the Duquesne Fireproofing Company, he retired from about two years ago. Mr. Albertson formed the Duquesne Sanitary Company in 1898, the business of this concern having grown steadily, until it is now about $700,000 per annum.

Edward McGraw, another of the early brick manufacturers of Pittsburg, known to members of the N. B. M. A. as "the four-year-old," is now proprietor of the American House on Liberty avenue, Pittsburg. He is at present spending a month or so at Atlantic City.

The Kittanning Brick Company's shade No. 12, repressed vitreous brick and Harbison-Walker Refractories Company's shade No. 210, vitreous repressed brick, has been ordered for the new building for the Carnegie Technical School at Pittsburg, and for the residence for the director. The new building will be known as the Margaret Morrison School for Women, and will cost about $300,000.

F. F. Orner, DuBois, Pa., has prepared plans for the new plant for the Hawthorne Pottery Company, to be erected at Hawthorne, Pa. The new building will be three stories in height, and will be 70 by 126 feet, floor plan. The cost will be about $30,000. The new plant will have all mechanical improvements, including a steam dryer. It will be remembered that the plant was burned down a couple of months ago.

E. B. Reed, 725 Second avenue, Clearfield, Pa., announces that the new brick plant that he is building is rapidly nearing completion, and will be put in operation in a short time. The plant is a short distance from Clearfield, and will be electric and motor driven, with presses, dryers, kilns, etc., of the most improved design.

S. D. G.

THE CLAY-WORKER

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TWENTY-THIRD YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

227-233 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

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CURRENT COMMENT.

If you can't take a vacation, take the nearest thing possible to it, take THE CLAY-WORKER.

* * *

When denatured alcohol takes the place of gasoline as a motive power, will the trail of an auto smell like a boozer's breath?

* * *

In figuring the comparative cost of construction, don't forget to mention that a good brick wall frequently saves enough in insurance to pay for itself.

* * *

To take advertising space and not use it properly is like buying a farm and failing to cultivate, in that you don't get the returns you should from the investment.

* * *

The politicians that like to sling mud might get jobs among the brickyards and kill two birds with one stone by helping out the labor supply while humoring their natural inclinations.

* * *

The American packers are now in the position of the small boy whose clothes were tied in knots by a big boy while he was in swimming. They feel like getting even with someone; so watch out for them.

* * *

The newspaper reports say that the designs on the new Panama bonds include a caduceus. The dictionary says that this is the emblem of good conduct, peace and prosperity, but how are those revolution-loving people down there to appreciate this, even with the aid of a dictionary?

* * *

When Edward Page Caston, of Chicago, recently testified before the House of Lords that the worst thing America sent to Great Britain is the American cigarette, he evidently forgot all about the tainted money that our people are supposed to take over there each year.

* * *

The man that does mission work for tile drainage is not merely helping make more business for the clay industry, but is also doing a public good for his country.

* * *

Science and fun would be a very appropriate caption for our report of the midsummer meeting of the American Ceramic Society. A glance at the group pictured on the first reading page of this issue, will convince even the skeptic that a smile is contagious. Look at Gates, then at Orton, and then look pleasant yourself.

* * *

Yes, we have heard of one place for which brick paving is not recommended, and that is the road to the unnamable place that is said to be paved exclusively with good intentions, but when it comes to paving city streets and country roads, brick can come nearer filling all requirements than anything that has so far been found.

CLAYWORKERS ABROAD.

F. Salmen, of Slidell, La., who sailed for Europe about six weeks ago, was in Antwerp recently, which place, he writes, is the home of small brick, the ordinary building brick there weighing about two pounds, and a two-horse team hauls 5,000 brick at one load. Mr. Salmen adds that he is enjoying his trip immensely.

W. N. Durbin, the genial secretary of the Anderson Foundry and Machine Works, and president of the American Sand-Lime Brick Machinery Company, is taking a well-earned vacation, which he will spend in Europe. His wife and son are with him and he does not expect to return home until November. Their headquarters will be Paris, and Mr. Durbin expects to visit many of the sand-lime brick plants of Germany, as well as the prominent clayworking plants.

RELATIVE MERITS OF VARIOUS STREET PAVING MATERIALS.

A most interesting compilation of reports of Municipal Engineers on street paving material has been made by the Denny-Renton Coal and Clay Company, of Seattle, Wash. It shows conclusively that brick paving is surely gaining favor in the leading cities throughout the country. The above firm has rendered a good service to the paving brick interests in gathering together this data, thereby proving clearly the superiority of vitrified paving brick as a paving material. It gives the experience of seventy-five municipalities, which, summed up, proves that the vital points—initial cost, cost of maintenance, lasting quality under all conditions of traffic, ease and expedience in making repairs and practicability on grades—stand out in bold relief, an overwhelming argument in favor of brick pavements as against all others now used.

BUSY HOOSIER BRICKMAKERS.

One of the most prosperous cities in all Hoosierdom is Muncie. To say that it is "growing like a weed" is not overstating the situation. It is located in what was formerly known as the "Gas Belt," and while gas has played out, so far as manufacturing purposes are concerned, the boom which started with the discovery of gas continues. It is a great trolley line center, a number of first-class interurban lines connecting it with the large cities within a radius of fifty miles or more. Building of all kinds is extremely active and there are a number of fine commercial structures now in course of construction. A noticeable feature of these large buildings is the extensive use of sand-lime brick, which are being furnished by the Diamond Brick Company, a local enterprise, started a couple of years ago. Under the clever management of Mr. H. H. Wolf, the company is securing its full share of the local business. They are making a common building brick only, no attempt having been made as yet to turn out front brick, so the brick are being used for foundations, backing-up and partition walls. The plant is located a short distance beyond the city limits and is operated under the American system; that is, the equipment was furnished by the American Sand-Lime Brick Company of Chicago, and consists of a four-mold Berg press, a single steam hardening cylinder, sand dryer, etc., having a daily capacity of 18,000.

The old-time brickmakers of Muncie, J. F. Mock and B. W. Bennett, are selling their brick through what is known as the Brick Exchange. The result is a staple market, common builders selling at $6.50 to $7.00 per thousand delivered. The Mock plant is running full-handed, turning out close to 30,000 per day on a Horton soft mud brick machine. The Bennett plant, which has a similar equipment, is shut down temporarily, Mr. Bennett having sold the plant recently. The new proprietor, John Poole, will have the plant in full operation again now soon. It is Mr. Bennett's intention to make a fresh start in the brick business in some other locality, not that he loves Muncie less, but because he is ambitions to build a new, larger and better plant. He will be very glad to correspond with any reader of THE CLAY-WORKER who can tell him of a desirable point where clay is plentiful, fuel is cheap, and where there is a good and growing demand for brick.

IN PERPETUUM HOMINUM MEMORIAM.

We commend to the thoughtful attention of THE CLAY-WORKER'S family of readers the entirely unique and somewhat startling story now being published in its columns under the above title, for, while it may seem to lead out into winding paths, running at times apparently some distance from the fields of THE CLAY-WORKER today, it has food for thought in it that is good for one's mental circulation, all of which in reality centers about the present and the future of clay-workers in a way that should appeal especially to broad-minded and deep-thinking people.

Stockton, in one of his stories, gave forcible as well as wide circulation to the idea that one man in every hundred stands out prominently among his fellowmen, on a distinctive plane of his own, and differing somewhat from this idea, but partaking considerably of its nature just the same, is another one that we all have brought home to us from time to time, and that is, that in every branch of the industrial world there comes on the scenes in the play of life now and then a man who in time becomes marked as a promoter of new thoughts. This, too, entirely aside from the crackbrained notions of cranks; they promote thoughts that grow into material form of great importance to the world, contributing largely to the power of progress. Sometimes it is a political idea, but more frequently in the sense we mean here, it is an industrial idea, or a train of industrial thoughts involving a number of ideas which are put in motion by the proper advocacy of these thoughts at the right time and place and in the right manner.

The authors of "In Perpetuum Hominum Memoriam" have already been distinguishing themselves by promoting important thoughts in the structural world, thoughts that appealed especially to the members of the clayworking industry, and now they have delved deeper into the realms of the things that have been and may be, and unearthed therefrom for presentation in this story some rich jewels of thought that should be treasured in the minds of all readers. Not only because of the value they contain in themselves, but also because of the fertilizing influence they may exert toward the propagation of new ideas in our minds.

The story is prophetic in its nature, delving into future possibilities, and while we are all aware that any effort to prophesy the future by the brightest mind must carry with it a large factor of uncertainty that makes it a risky business, especially if we look at it merely from the standpoint of the litteral fulfillment of prophecy, we should remember that the main purpose of all true philosophy is, and has been since the time of Samuel, the accredited originator of prophetic teaching, has been directed toward the reformation and elevation of the people. In this enlightened age, therefore, we should view it more in the light of the possible good it may lead to than the probability of its literal fulfillment. In other words, we should regard prophecy of this kind as being more suggestive than assertive, and look for good in it from the thougths and ideas it generates in our own minds, cultivate them, put them into material form, and thus secure progress, which will fulfill the main purpose of this story, to stimulate and progress and awaken the trade to the importance of the clayworking industry, not only from the magnitude of present possibilities, but in the matter of endurance against the ravages of time.

The story, as you may infer from all this, is drawn from the future through imaginative mental views, shrouded in a suggestion of the occult through which the writer is enabled to see the history of the future as it is portrayed in the daily newspapers from time to time. While under the spell of inspiration, hypnotism, or whatever you desire to call it, the author, after making a trip into the past and seeing with the mind's eye the destruction of Babylon, takes flight into the future and is asked to mark the newspapers placed before him out of the mystic depths of the time to come, such items as hold special interest for him, and it is these items arranged in scrap-book form that make up the story. The first clipping comes from the Washington Post, December 3, 1906, and deals with the proposed improvement in the city of Washington, in which the idea of a national monument of remarkable design and magnitude is suggested. In time other clippings that come in order turn to the discussion of what material the monument should be made, in which it is brought out that baked clay is the only absolutely imperishable material. Then the subject matter of the clippings branch out and include discourses on the subject of burial, the problem of prison labor, political landslides, and other matters are touched on incidentally, leading at times apparently apart entirely from the field of special interest to the clayworker. But it is all for a purpose, and in the end it is found that all these things center around one important point, and that is, the building of everlasting monuments to mankind out of burned clay, perpetuating both the names and deeds of men who have accomplished things, in a manner somewhat startling, wholly unique and one that will appeal strongly to the reflective mind, and likely open up to our mental vision unexplored fields of useful thought that we may wonder why we had not discovered before. It would not be fair to give a complete review of the story in advance, as that would detract somewhat from its impressive features as it unfolds itself in detail, so we refrain from further explanation and commend it for careful reading and thoughtful attention.

NATIONAL CONVENTION, BROTHERHOOD OF OPERATIVE POTTERS.

At the national convention of Brotherhood of Operative Potters held at Akron, Ohio, in July, the following officers were elected:

President, T. J. Duffy, East Liverpool; first vice-president, Frank H. Hutchins, Trenton, N. J.; second vice-president, Samuel Crawofrd, East Liverpool; third vice-president, Harry

Hailes, Kokomo, Ind.; fourth vice-president, Thomas J. Humphrey, Trenton, N. J.; fifth vice-president, Mayor Charles Dorff, Sebring; sixth vice-president, George M. Martin, Trenton, N. J.; secretary, Edward Menge; treasurer, John Wood, both of East Liverpool. All are re-elections excepting that of Mayor Dorff, of Sebring, who succeeds S. M. Moore, of Trenton, N. J.

The next convention will be held at East Liverpool, Ohio, a year hence.

ENORMOUS QUANTITIES OF BRICK NEEDED IN THE REBUILDING OF SAN FRANCISCO.

It has been estimated by men who are fond of statistics, that it will take six billion brick for the building of New San Francisco, and that this many brick would build a wall five feet high around the world. The engineers, in estimating what is necessary for this work, took, to reach an approximate estimate, a four-story brick building 44 feet wide and 110 feet deep, as a standard. Of course, there will be hundreds of larger brick buildings, but there will also be a large number of smaller ones. Using the above standard as a basis, there would be 12,000 brick buildings. This standard brick building would consume in its walls 548,000 brick. Therefore, 12,000 such buildings would embrace in construction 6,576,000,000 bricks. By actual measurement the brick manufactured in and around San Francisco are 7½ inches long. Then 6,000,000,000 brick are more than 4,000,000,000 feet long or 778,000 miles, or five times around the world, with several thousand miles to spare.

THE SEWER PIPE COMBINE DISSOLVED BY MUTUAL CONSENT.

The agreement which has existed for three years between the sewer pipe manufacturers of the country has been dissolved, and the plants will now be operated independent of any combine or agreement. This was brought about by a movement which had been set on foot in New York to investigate what was known as the "sewer pipe trust." The attorney for the manufacturers advised then that their "agreement" was illegal, and it was at once decided to discontinue the combine and abolish their headquarters at New York. A plan is now under consideration to organize one large corporation and purchase all of the independent and smaller factories, following plans upon which the United States Steel Company was organized. It is said that the majority of the owners of the plants are in favor of such an organization.

Written for THE CLAY-WORKER.

THE MAN BEHIND THE PICK.

There has been all kinds of gush about the man who is "behind"—
And the man behind the cannon has been toasted, wined and dined.
There's the man behind the musket and the man behind the fence,
And the man behind his whiskers and the man behind his rents;
And the man behind the plow and the man behind the hoe;
And the man behind the ballot and the man behind the dough;
And the man behind the counter and the man behind the bill;
And the man behind the pestle and the man behind the pill;
And the man behind the jimmy and the man behind the bars;
And the Johnny that goes suping on the stage behind the stars;
And the man behind the kisser and the man behind the fist;
And the girl behind the man behind the gun is on the list;
And the man behind the bottle, and when they were short of men,
There was some small rhymster warbled of the man behind the pen;
But they missed the honest fellow, and I'm raising of a kick,
That they didn't make a mention of the man behind the pick.
The man behind the pickax is the one we seldom know;
He's the only man in Christendom who never has a show.
You will find him in the brickyard, you may find him picking bricks,
But you fail to see him hold a job controlled by politics,
For he's the man that's always behind, behind, behind.
The pickax builds his muscle, while the shyster steals his mind;
He's the man that just a-coming; we can see he's learning fast,
For he's going to teach the grafter that his days are near the last.

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HAVE YOU SEEN our latest publication—Part V of our general catalog of Testing and Controlling Apparatus? A copy for the asking.

The Richardson-Lovejoy
(See page 206.) Engineering Co.

WANTED, FOR SALE, ETC.

WANTED.

Position as manager or foreman of a sewer pipe plant by a young man who understands the business from beginning to end. Best of references. Address W. S.,
8 1 c Care Clay-Worker.

WANTED.

Position as foreman or glazer in a terra cotta plant by a young man who thoroughly understands the business; also terra cotta, glazing and slipping. Address P. P.,
8 1 c Care Clay-Worker.

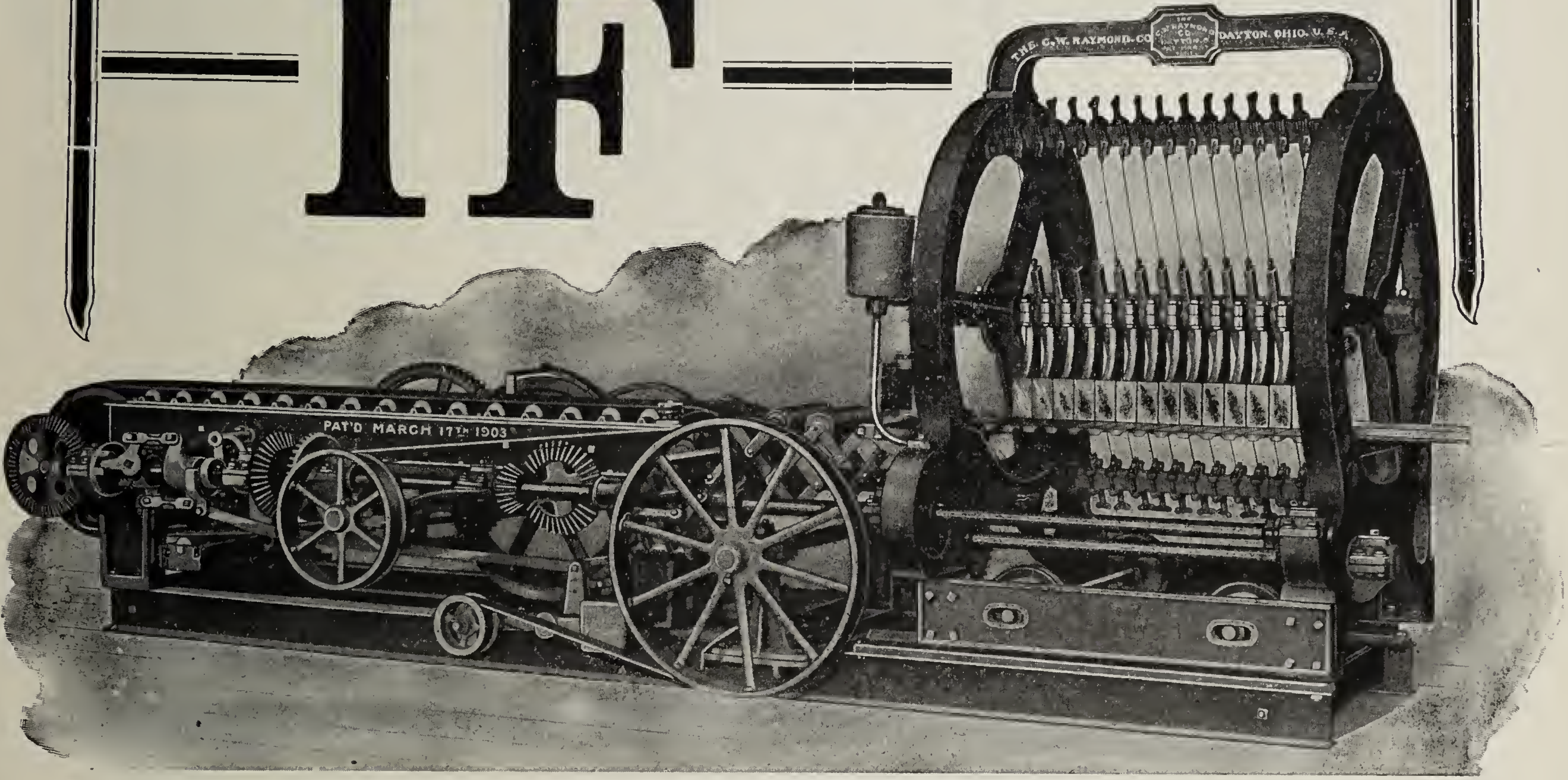
WANTED—Position as superintendent of fire or paving brick plant. Practical man with 22 years' experience. No bad habits. Address
C. E. F.,
8 1 cm Care Clay-Worker.

For Sale, Wanted, Etc., Ads Continued on Pages 188 and 189.

Could YOU Use An

Automatic Cutting Table

—IF—



It made all brick uniformly true
It gave you four good faces on each brick
It left no feather edges
It were down shear cut
It were absolutely self-regulating, cutting with equal accuracy 10,000 or 100,000 brick per day

The Raymond Automatic Cutting Table Will Do All This, and Then Some

The No. 1 Cutter, capacity from 75 to 150,000 standard size brick per day
The No. 2 Cutter, capacity from 30 to 80,000 standard size brick per day

Our Catalogue Free

THE C. W. RAYMOND CO., Dayton, Ohio, U.S.A.

Written for THE CLAY-WORKER.

BRICK AND BUILDING NEWS OF ST. LOUIS.

THE SETTLEMENT OF THE RECENT labor troubles and the large increase in the amount of building that has been done recently and is now in progress, has given the brick manufacturers in St. Louis all that they can do. Every brickyard is working to its full capacity and is turning out all the brick that they possibly can, in order to meet the demand that is being made on them. From reports this condition is likely to continue during the balance of the year.

Prices of brick continue to remain the same as they have been for several months past. The only increase that is asked is where brick is wanted for quick jobs and as an incentive for immediate delivery, an advance of a few cents is offered, it is said, in order to avoid the delay in waiting.

Common brick continue to be sold for $8.50, in spite of the fact that reports from New York say that common brick at that point have declined from $14.00 to $5.00 recently.

According to F. G. Middlekauff, vice-president of the Hydraulic Press Brick Company, the Eastern decline is a condition peculiar to the East about this season of the year. In speaking of the drop in prices he says: "In New York the yards cannot manufacture in the early months of the year, and as a result enough brick is made in the late fall months to tide over the spring. Last spring there was a great deal more building going on than in former years, and the supply ran out. Naturally the supply was sold at the highest possible price, the one offering the most getting the goods. The price of $5 is the normal price of brick in the East. The decline is due simply to the fact that the yards are running and the supply is more than adequate to fill the demand."

Building business for July maintained the good record of the earlier months of the year. The valuation of the new buildings, repairs, etc., for which permits were issued, indicate an increase of more than 41 per cent. over the record made in July, 1905. The permits issued in July numbered 897, and the value of the buildings to be erected is $3,358,779. In July, 1905, the permits numbered 755 and the value of the buildings was $2,374,395. The gains were 121 permits, $984,384 in value, or 41½ per cent.

The building business for the first seven months of this year has made a very creditable showing, compared with that of last year. The record shows that 5,217 permits were issued, representing buildings of the value of $18,305,572. The permits for the corresponding period of last year numbered 4,662, and the value of the buildings was $14,694,420, a gain of $672,268, or about 24½ per cent.

Members of the St. Louis Architectural Club, comprising sixty architects and draughtsmen, enjoyed an outing Saturday, Aug. 4, afternoon and evening, as the guests of the Hydraulic Press Brick Company. The members met at their clubrooms in the Dolph Building at 2 o'clock, and two trolley cars were furnished to convey them to the works of the brick company at King's Highway and Manchester avenue. After spending some time at the works they again boarded the cars and were taken to Crève Coeur Lake. An excellent repast was served in the cars on the way out. A short time was spent in riding on the scenic railway and strolling by the lake, and the party returned at 10 o'clock.

The consolidation of thirteen great pressed brick companies, with headquarters in this city, which is now under way, is simply a reorganization, as the companies have been dominated for many years by the Hydraulic Press Brick Company of St. Louis. The new company is to take the name of the Hydraulic Press Brick Company of St. Louis. It is said that the companies, when consolidated, will not control the brick production of the United States, as there are many independent concerns in different States.

The Hydraulic Press Brick Company, of St. Louis, will increase its capital from $1,500,000 to $10,000,000, of which $5,500,000 will be preferred 6 per cent. cumulative, and $4,500,000 will be common stock. The stock will not be exchanged share for share with the other companies, but will be exchanged on the book value of the stock of the various companies, some being worth more than others. The reorganization will be completed within sixty or ninety days.

The companies to be consolidated are: American Hydraulic Press Brick Company, of St. Louis; Chicago Hydraulic Press Brick Company; Cleveland Hydraulic Press Brick Company; Eastern Hydraulic Press Brick Company, Philadelphia; Findlay Hydraulic Press Brick Company, Findlay and Toledo, Ohio; Illinois Hydraulic Press Brick Company, St. Louis; Kansas City Hydraulic Press Brick Company, Kansas City and Chanute, Kan.; Kelly Brick and Tile Company, West Superior, Wis.; Menomenie Hydraulic Press Brick Company, Minneapolis; Ohio Press Brick Company, Zanesville; Omaha Hydraulic Press Brick Company; Union Press Brick Company, St. Louis, and Washington Hydraulic Press Brick Company, Washington, D. C. The consolidation is of the greatest importance to the building industry, as well as to public improvement work. The companies included manufacture all grades of brick from the finest decorative cornice work to street paving and sewer lining material. Notices of the plans have been issued to all the stockholders. The home company's average output of bricks is 80,000,000 yearly.

The results obtained by the brick manufacturers using the Andrus Press, manufactured by the Scott Manufacturing Company, has been so satisfactory and the reputation of the press has become so well known, that an excellent business is being done by the company. Orders have been quite numerous this season. "Dixie" Scott, the president of the company, is well pleased with the business done this summer.

Business is booming at the plant of the Anthony Ittner Brick Company, and they are having about all they can attend to to fill orders.

Business has been quite satisfactory at the plant of the Fernholtz Brick Machinery Company. Their Fernholtz Brick Press is meeting with general favor.

The improvement that has been made by the Laclede Fire Brick Manufacturing Company in their plant, has increased the capacity fully 25 per cent. They are working to their full capacity and their business is excellent.

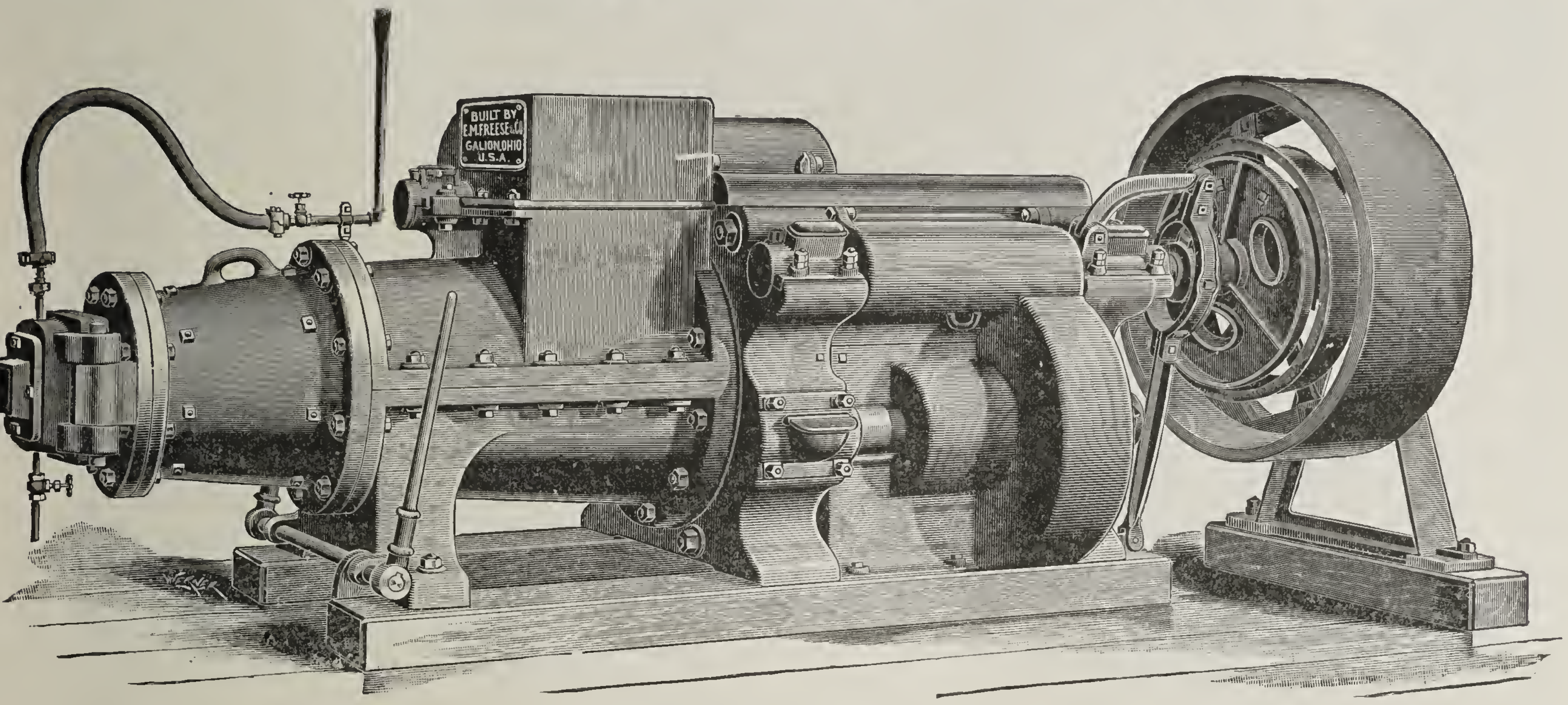
A nice steady increase in business is reported by the Williams Patent Crusher and Pulverizer Company. Their machines for crushing clay are being extensively placed in brick manufacturing plants.

The McNeil Pressed Brick Company, whose plant is at Newburn, Ill., is turning out a great many brick. The output has recently been greatly increased.

A splendid business is reported by the Evens & Howard Fire Brick Company. A. SAINT.

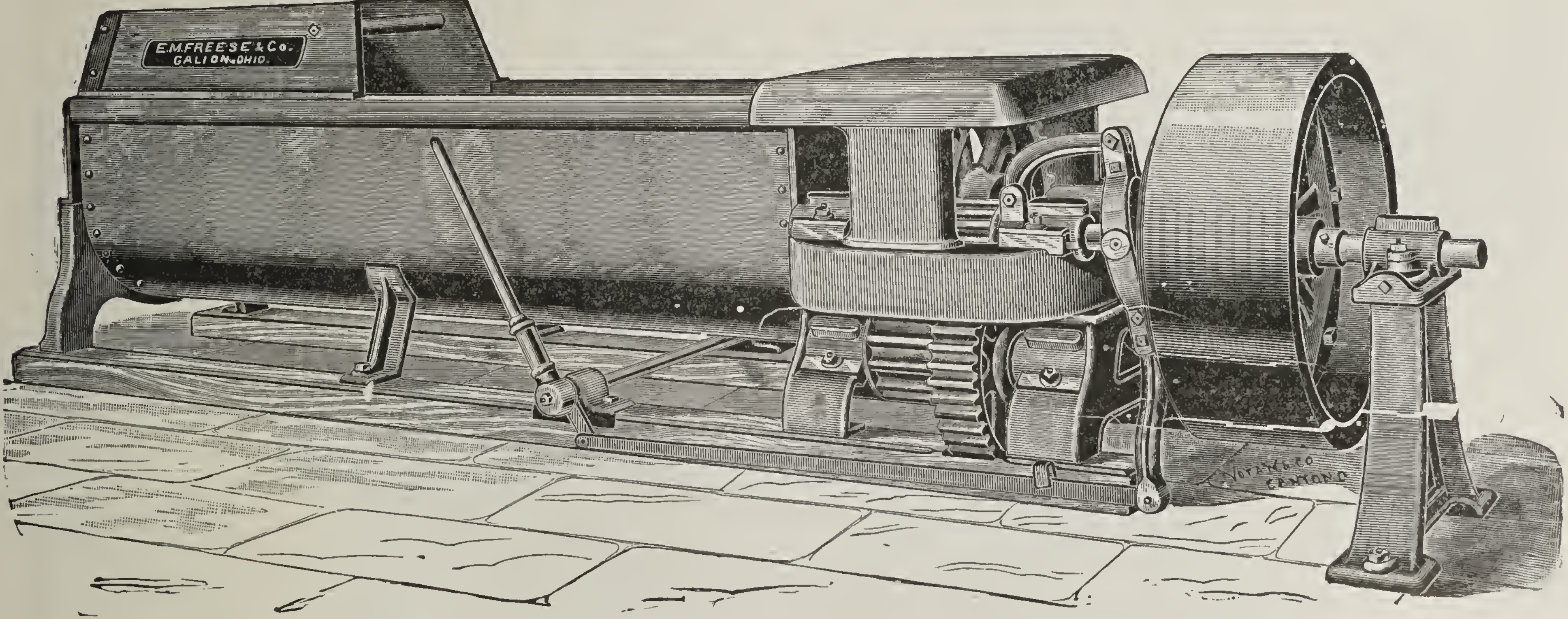
"Well, I suppose it's love that makes the world go round."
—Life.

Our Mammoth Brick Machine


BUILT BY
E.M.FREESE & Co.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitetd for making a fine quality of brick.

E. M. FREESE & CO., - - Galion, Ohio.

Mention The Clay-Worker.

See Ads on Pages 228 and 229.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.

OWING TO THE trouble among the brick masons, there was hardly as many building permits taken out in this city in July as was expected; in fact the amount of the building permits was very little over the permits for the corresponding months of last year, but the demand for gas-burned brick continued to be very heavy, and the dealers in that class of brick had a hard time to meet the demands made upon them.

During the past month there was 386 building permits issued, with a total value of $880,555, and of these forty-three were for brick buildings, with a valuation of $358,450. The increase in cost over permits of July, 1905, was $5,985.

Building operations throughout the country showed an increase of 11 per cent. for the first six months of the year, according to official reports of building permits. Kansas City is eighth in the list of twenty-five of the principal cities of the country, the permits aggregating $5,779,400, an increase of 8 per cent. over the corresponding period last year.

The seven cities ahead of Kansas City are New York, Brooklyn, Chicago, Philadelphia, St. Louis, Pittsburg and Los Angeles.

Kansas City is ahead of Detroit, Milwaukee, Indianapolis, Cincinnati, St. Paul, Mineapolis, Atlanta, Omaha, New Orleans, Allegheny, Buffalo, Columbus, Seattle, Louisville and Memphis. Kansas City permits are twice those of any of the above excepting Minneapolis, Buffalo, Cincinnati, St. Paul and Denver.

There has been quite a little brick used for paving purposes here of late. Not on the streets, where the public would get a chance to see its value, but some of the railroad yards are being paved, notably the Kansas City Southern; also some of the packing houses have been paving their yards, and of course picked out the most durable material they could find.

Dealers who handle brick from the Kansas gas belt and have to depend on the railroads, have been having a hard time to get delivery the past few weeks, largely on account of the heavy shipments of wheat. It seems there is a low rate on wheat at this time and a great deal of it is being shipped out of the country. Brick have to take a back seat, for the time being. There seems to be no trouble to get empties at the yards, but after the cars are loaded, and start for this city, they are dropped out on some side track, and not heard of for about a week. One dealer states that it is averaging him about a week to get a car of brick in from a factory not over 150 miles away.

Another very bad feature of the shipping business is the fact that holding the brick out on some siding usually results in five or six cars getting here at the same time. They are set on the switch of the dealer, and if not unloaded in twenty-four hours they begin to have demurrage charges run on them. This is absolutely unfair, as the dealers order the cars so they should get here far enough apart to have regular forces unload them without demurrage loss. When the cars are allowed to bunch up it sometimes happens that it is impossible to find men and teams enough to unload them in the required time. Dealers have put up with the practice as long as they can, and one expressed the determination to make a test of the matter before the Interstate Commerce Commission the next time he had demurrage taxed to him.

The brick factories in the Kansas gas belt are evidently getting plenty of orders from other sources, for they have stiffened up on their quotations, now asking $7.50 and $8.00 for common brick. The Kansas City plants, on the other hand, seem more anxious, and are making a little lower delivered price, their offering being common brick for $7.00 and $7.50. This difference in the price is making a good deal of business for the local yards, in spite of the expressed preference for gas-burned brick for building purposes.

The Kansas City Vitrified Paving Brick Company is reporting an easy sale of the product of its plant, large sales having been made for both paving and building purposes. A sale was just closed this week for paving streets in Independence, Mo., which amounted to about 800,000 brick. They have been furnishing Swift & Co., packers, with a lot of brick to pave their yards, and the demand for their brick for building purposes is growing all the time.

The Lyle Brick Company, of this city, is starting to build a third kiln, and this will enable them to run their plant to its full capacity, and they will have no trouble in disposing of all they can make, as their brick has gained an enviable reputation among builders.

The Pittsburg Brick Company has at last got the big new shovel in, at the Pittsburg plant, and is ready to handle anything that grows in the ground. The plant is oversold about 9,000,000 brick, and they are not looking for any new business, as it will take them several months to turn out the business booked. Among recent sales to be delivered from that plant was 1,300,000 paving blocks for Lake Charles, La. Another good sale, to be shipped from the Sycamore plant, was 1,500,000 brick to the Emporia Ice and Cold Storage Company, of Emporia, Kas., to go into a big ice and cold storage plant there.

The Pittsburg Shale Brick Company has but recently been incorporated in Pittsburg, Kas., with a capital of $100,000, to succeed to the plant of the Alphons Custodis Chimney Brick Company, of Pittsburg. Conrad Worms, New York, is president; Frank Stratford, of Pittsburg, is secretary, treasurer and manager. The plant is to be enlarged.

The big paving and sewer contract in Fort Smith, Ark., has been let. Burke Brothers, of St. Louis, Mo., got the paving contract, which amounted to $601,225. They agree to put in a plant in Fort Smith and turn out the brick there, thus giving the city a new industry. W. J. Gawne & Co., of Cleveland, Ohio, received the contract for furnishing the sewer pipe, etc., the contract figuring up $471,454.25.

It is stated in Fort Worth that these two contracts only represent the beginning of what they expect to spend there for paving and sewer work. K. A. W.

SEPTEMBER IN THE ADIRONDACKS

No finer place can be found than the Adirondacks in September.

The air is cool and bracing, the scenery beautiful and the sense of perfect rest that comes with the night is delightful.

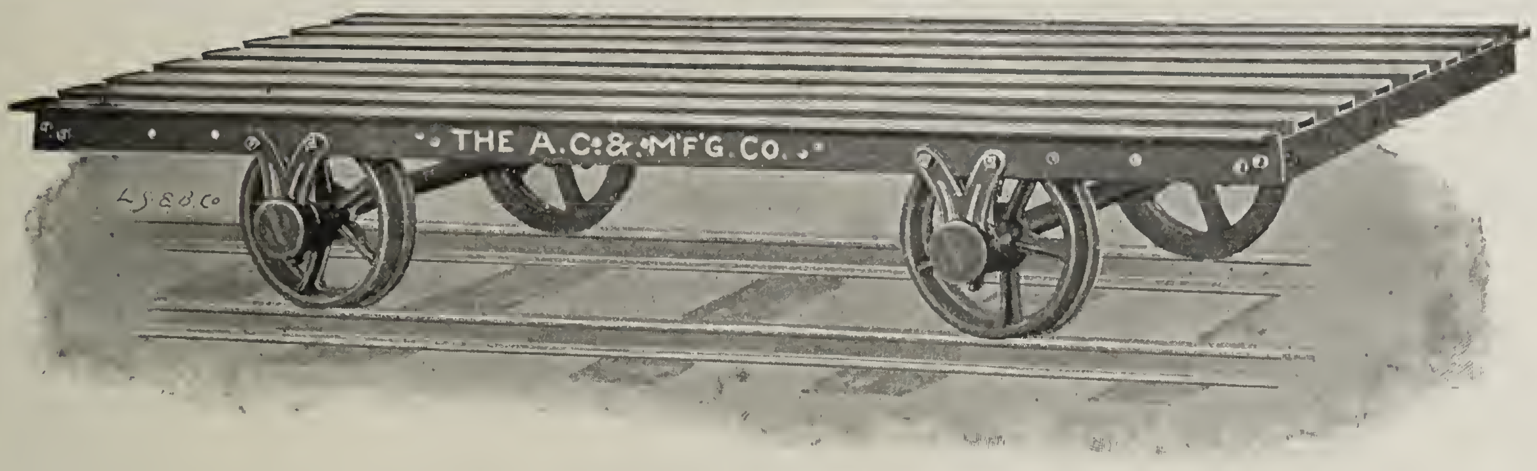
This wonderful region is reached from all directions by the

NEW YORK CENTRAL LINES

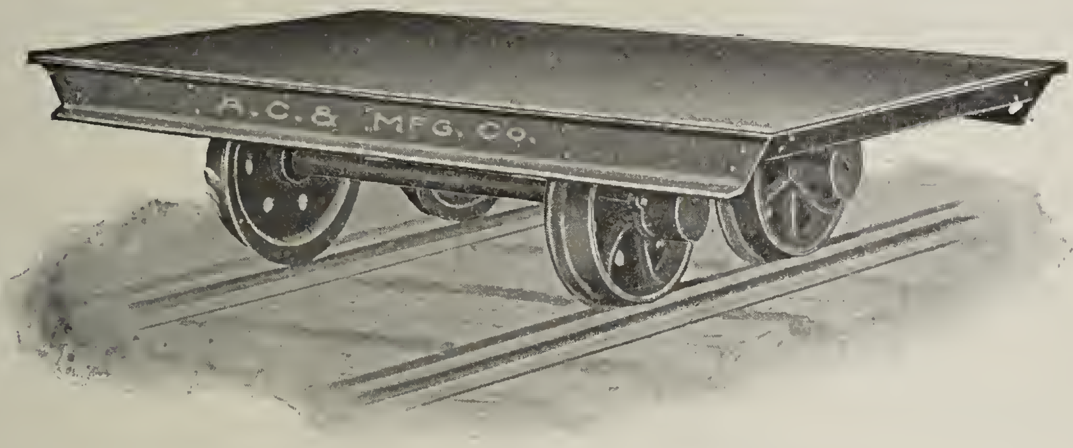
"America's Greatest Railroad."

For a copy of "The Adirondack Mountains and How to Reach Them," send a two-cent stamp to George H. Daniels, Manager General Advertising Department, Grand Central Station, New York.

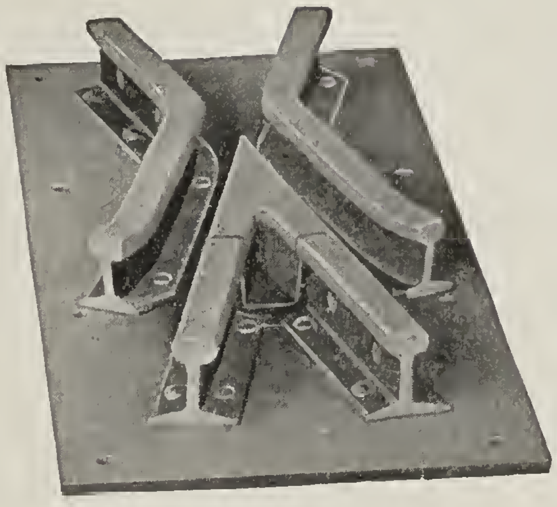
C. F. DALY,
Passenger Traffic Manager,
NEW YORK.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



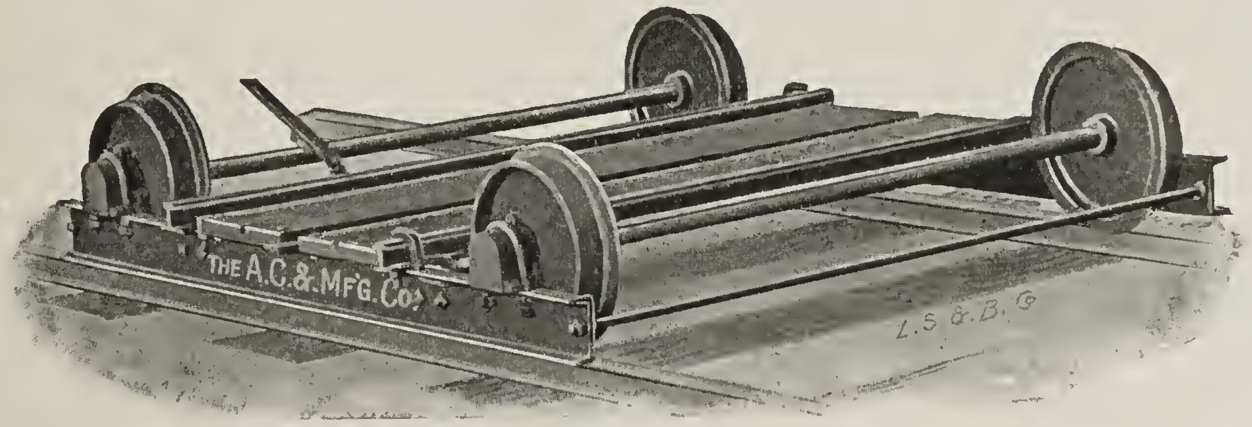
No. 1025. Steel Frog.

The Atlas Car & Mfg. Co.,

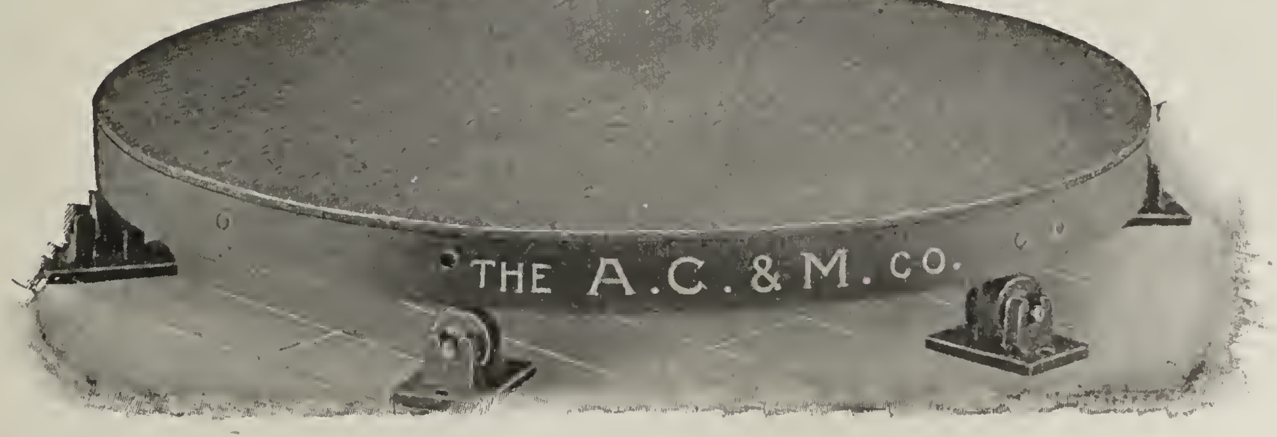
CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc. Also Transfer Cars, Turntables, Clay and Dump Cars.

No. A. Flanged Pallet.

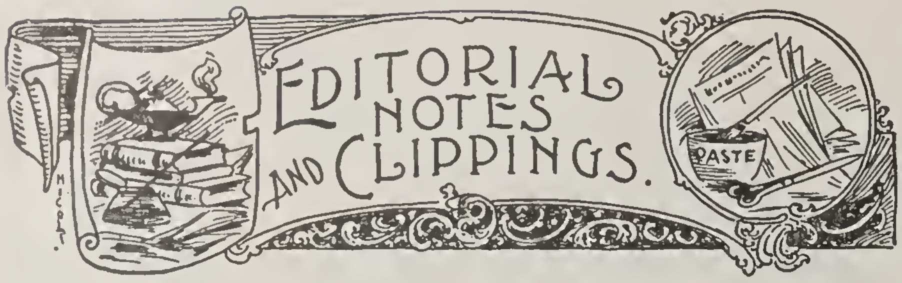


No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

See Ad on Page 118.



EDITORIAL NOTES AND CLIPPINGS.

Hammond, La., is to have a new brick plant.

The Maryland Brick and Supply Company is erecting a $45,000 brickmaking plant at Fredericks, Md.

The Auburn Brick and Tile Company has been incorporated at Auburn, Ill., where a small plant will be erected.

The plant of the Citizens' Brick Company, just south of Muncie, Ind., was destroyed by fire recently. The loss is estimated at $5,000.

Fire destroyed the kiln sheds at the plant of the Miller Brick Company, Benton Harbor, Mich., recently, causing a loss of $200, on which there was no insurance.

The Fitzgerald Brick Company has been incorporated with a capital stock of $100,000. The directors are Charles A. Tasusig, John M. Bovey and James J. Fitzgerald, all of New York City.

Leiby & Flurie, brick manufacturers, of Harrisburg, Pa., are experiencing an unusually busy season, having demand for all the brick they can turn out by running their plant to its full capacity of 50,000 per day.

The brick manufacturers of Baltimore, Md., are all busy as can be turning out on an average of 150,000 brick per day at each of the eighteen yards. The supply is only about equal to the demand and good prices are being maintained.

Fire partially destroyed the factory of the Peerless Brick Company, 557-561 East One Hundred and Eighteenth street, Manhattan, on the Harlem river, opposite Randall's Island, early in the morning of August 7. The damage is estimated at $20,000.

Fields & Brother, large brick manufacturers of Chester, Pa., have made application for letters of incorporation. The concern has grown so extensively that new capital has been taken in to the firm and they desire to incorporate as the Fields Brick Company.

A flood, which was caused by a cloudburst, created great havoc at Mount Savage, Md., early in the month. The plant of the Ramsey Enameled Brick Company was damaged to the extent of about $5,000, and the Union Mining Company, manufacturers of high grade fire brick, lost several hundred thousand brick.

H. O. Duerr, general manager of the Diamond Stone Brick Company, Wilmington, Dela., in a recent letter says: "We are extremely busy. In fact, have been compelled to turn down orders, though we had a stock of 2,000,000 brick with which to start the season. We are furnishing the brick for one building requiring 1,500,000 brick."

The Bessemer Fire Brick Company of Ensley, Ala., has begun a large shipment of fire brick to Virginia for the erection of several large batteries of coke ovens. There will be several million brick in the consignment and represents the output of the plant for several months. The Stoneza Coal and Coke Company, one of the largest mining corporations in the State, is using the brick.

The Taylor Pottery Company has been incorporated for the purpose of operating the plant of the Faience Pottery Company, at Zanesville, Ohio. The incorporators are E. L. Taylor, Laura B. Taylor, W. B. Gulick, F. F. Gulick, all of Crooksville, and George W. Richards, of Zanesville. The pottery will be under the management of E. L. Taylor, who has experience in work of this sort.

Chambers Brothers Company, Philadelphia, Pa., recently closed a contract with the Rome (Ga.) Brick Company for an entirely new equipment of clay preparing and stone extracting machinery. They have recently shipped a complete outfit of machinery to the new Townsend Brick Company at Townsend, Ga., and a large machine outfit complete, for the new plant at Riverside, Ala. Mr. S. B. Chambers, the Treasurer of the company, who was operated on for appendicitis some time since, is slowly but surely improving. His recovering has been very tedious and his friends will be glad to know that he is on the mend. He has been out of the harness since early in April.

C. S. Kingsmore will establish a brickmaking plant at Columbia, Ga., and is in the market for machinery and equipment.

The Texas Fire Brick Company has been incorporated at Bastrop, Texas, with $300,000 capital stock. Karl Schwartz, of Corsicana, and C. C. Wilson, of Denver, Colo., are the chief stockholders.

Alexander A. Scott and Alex McMillan, of Knoxville, Tenn., and B. C. Fennell, of Atlanta, Ga., have applied for a charter for the Scott Brick Company, to be capitalized at $50,000. It is proposed to establish a brick plant at Atlanta.

The Southern Brick and Tile Company, Louisville, Ky., advises us that they are in the market for a steam dredge for digging small ditches. Interested parties should address Mr. T. Bishop, the manager, direct, at 618 Park avenue, Louisville, Ky.

Mr. A. R. Harwood, who for some years has had active management of the plant of the Gonzales Brick and Tile Plant at Sunset, Texas, has moved to San Antonio, where he will have an office and look after the interests of the company at that point. Mr. Claude O'Neall will have charge of the plant.

The Boulder Pressed Brick Factory, at Boulder, Colo., one of the largest concerns in Colorado, has been sold by Eugene A. Austin, of Boulder, to three Pennsylvania capitalists—E. J. Lesser, of Titusville, and J. H. and I. N. Bair, of Pittsburg. The consideration is not given out. The new company will be managed by E. J. Lesser, an oil refinery operator of Titusville, Pa.

The Ogden Sewer Pipe and Clay Company will increase the capacity of its plant at Salt Lake City, Utah, to more than double its present capacity some time this fall. These proposed improvements will mean an expenditure of about $50,000. The main building to be added to the plant will be 200x80 feet and will be fitted up with modern machinery at a cost of close to $40,000.

The premature explosion of a fuse, which was used in blasting shale at the shale pit at the plant of the Western Brick Company, at Danville, Ill., recently, resulted in the almost instant death of one man and the severe injury of several others. It is supposed the explosion was caused by a defective fuse, as the dynamite exploded almost as soon as the fuse was lighted, and the men had no time to get to a place of safety.

A stock company has been formed at Covington, La., for the purpose of establishing a brick plant. S. D. Bullock is President; E. J. Domergue, Jr., Vice-President; W. P. Fussell, Secretary and Treasurer. The company has already secured a desirable location for its plant, a tract of 160 acres, four miles from Covington. The abundance and cheapness of fuel to run the plant is an item in favor of the location selected. The initial steps towards establishing the plant will be taken at once. The promoters hope to install the necessary machinery and be running within a few months.

W. W. Ellis & Son have leased a tract of land near Canton, Ill., and will remove the plant of the Canton Brick and Tile Company to the new location. The capacity of the new plant will be largely increased, and the manufacturing of paving brick will be undertaken on a large scale, in addition to building brick and tile, to which lines the company has hitherto confined its operations. The newly leased tract has large deposits of shale of the quality most fitted for the uses to which it is intended to be put, while the shale on the Sixth avenue site has been practically worked out.

A new paving brick company has been organized at Portsmouth, Ohio, which has taken over the capital stock of the Portsmouth Pressed Brick Company, which plant is now in operation. The new company will be known as the Portsmouth Paving Brick Company and has been incorporated by H. S. Grimes, S. Labold, D. W. Conroy, W. L. Hitchcock and William Corieil. The new company will continue the operation of the present plant, which will be improved and the capacity increased as may be deemed necessary. Mr. H. S. Grimes, the President and general manager of the old company, on account of press of other business interests, will not take an active interest in the management of the plant, but as a director of the company will continue to have a lively

(Continued on page 186.)

The International Sand-Lime Brick & Machinery Co., Inc.

Engineers and Contractors for the Erection and Equipment of Factories for the Manufacture of

BRICKS, BLOCKS AND OTHER BUILDING MATERIALS

Out of SAND or Rockwaste, Slag, Cinders, etc., and a small percentage of LIME

BY THE INTERNATIONAL PROCESS

which is the combined essence of all the best foreign and American methods and machinery for the manufacture of building material out of sand and lime. WE OWN AND CONTROL the very best and latest patents for the preparation of the raw material and have

The Oldest and Most Extensive Practical Experience in the United States
as Engineers in the Sand Lime Brick Business.

We are the SOLE OWNERS of U. S. Letters Patent protecting the only perfect, scientific and practical method of mixing sand and lime and which is commonly known as the

DIVISION METHOD,

as also own the letters patent protecting the use of the

"V-Shaped, Divided Continuous-Feed and Discharging Bins."

It has been fully proved that by the use of the DIVISION METHOD a superior brick results, with less lime than with any other method, because

ALL OF THE LIME with but ONE PART of the sand are ground into a fine powder filling the interstices between the BALANCE OF THE SAND GRAINS not with lime alone, but with a fine mixture of **sand and lime,** producing, therefore, a **well-filled, dense and hard brick,** with MINIMUM amount of **lime and light pressure.**

OUR METHOD OF STORING the mixture, drawing same from the V-shaped Silos—insures uniformity of mixture reaching the presses, uniform as to moisture, age and structure—therefore giving a uniform brick.

We publish the above information TO WARN THE PUBLIC

that the use of these methods is strongly protected by U. S. letters patent, which we own, and that only those holding a valid license can use this method of mixing the sand and lime and storing the mixture.

We have the MOST UP-TO-DATE AND BEST MACHINERY to execute the work of grinding and mixing sand and lime to perfection.

WE GUARANTEE

to produce a **better brick,** with a **smaller percentage of lime,** than can be done with same material by any other process, or method of **mixing.**

WE WILL UNDERTAKE TO INSTALL OUR PROCESS IN SUCH FACTORIES WHICH ARE NOT ABLE TO PRODUCE A GOOD BRICK at a minimum cost of labor and power, under the safest guarantees:

NO RESULTS, NO PAY.

We shall be pleased to give you our **expert opinion** on your material and on your outfit and act as **Consulting Engineers for you.**

We will undertake to reconstruct or to remodel at the lowest possible cost SUCH FACTORIES AS ARE PRODUCING POOR BRICKS, OR ARE BROKEN DOWN, UNDER AN ABSOLUTELY SAFE GUARANTEE:

NO RESULT, NO PAY.

We build and equip new factories with our own special measuring, mixing and pressing machinery, and give you a **perfect guarantee** for the efficiency of the factory.

If you wish to enter into this new industry, which is a big MONEY MAKER if carried on properly, and under favorable conditions, or if YOU ARE IN TROUBLE with your factory,

HERE IS YOUR OPPORTUNITY:

If you are new in the business, and you think of entering same, write, telling us about local conditions, prices of fuel, labor, and we will tell you the truth. If the conditions do not seem favorable we shall say "DON'T," and give the reasons "WHY." If you send us but a couple of ounces of any sand you are considering for the manufacture of brick, we will give you our opinion of the QUALITY OF BRICK IT WILL MAKE, FREE OF CHARGE. If all looks favorable towards doing business, we will make bricks for you if you bring or ship 100 lbs. of sand to where we direct—free of charge—and if you don't like what you have learned we shall not grumble and be your friends just the same. We are not WORKING FOR OUR HEALTH, BUT WE DON'T want to create or EVEN ASSIST TO CREATE FAILURES. We would rather have ONE success than a DOZEN FAILURES a year. So would you, and we both know why. "IT PAYS IN THE LONG RUN."

ADDRESS ALL COMMUNICATIONS TO THE

International Sand-Lime Brick & Machinery Co.,

136 Liberty Street, **NEW YORK.**

interest in the welfare and advancement of the paving brick industry.

The Hunter Brick Company's plant at Grand Forks, N. D., was damaged to the extent of $750 by a fire which started in the kiln sheds. There was no insurance.

J. B. Toomey, of the Montello Brick Works, Reading, Pa., in sending in his subscription, says: "The business here is still on the boom in full force, with no signs of abatement."

D. B. Greathouse is at the head of a new concern, to be known as the Greathouse Brick and Tile Company, which will erect a plant at Lewisport, Ky., for the manufacture of brick, tile, hollow ware, clay shingles, etc.

While unloading clay at the plant of the Don Valley Pressed Brick Company's plant at Toronto, Ont., John Vernon, one of the employes, lost his footing and fell into one of the large pug mills. The machine was stopped almost instantly, and the boy escaped with only a broken leg.

The U. S. A. Novelty Company, Marietta, Ohio, writes that they have met with unusual success in introducing their cutting wires to the brick trade. They have received orders from as far west as San Francisco and as far east as New York. They have recently installed some new machinery for the manufacture of their wires which is proving very satisfactory. Their wires are all guaranteed to be rust proof.

N. C. Johnson, Secretary of the Johnson-Porter Clay Company, Paris, Tenn., in sending a subscription for THE CLAY-WORKER, states that the company has recently been incorporated under the laws of Tennessee, and is now opening a number of clay deposits, which, as far as tested, are the best American ball clays found in this country. The deposits are on the railroad, so that transportation will not interfere with the marketing of the product, and the outlook is very promising.

It is reported in the New York daily papers that A. A. Gery, President of the United States Brick Company of Reading, Pa., has consummated a deal whereby the Seaboard Brick Company of New York City, one of the subsidiary companies of the first named corporation, will erect, within six miles of Hoboken, a brick plant to cost in the neighborhood of $1,500,000. The plant will be on the Hackensack river, the company having purchased 700 acres of land for a site, and it is estimated that it will have a capacity of 150,000,000 brick annually, to be sold exclusively in the New York market. No deeds have yet been put on record for the property, and no official confirmation has been made of this report.

The Kaw Valley Brick and Tile Manufacturing Company has bought the Willard brick plant, formerly under the control of the Topeka Tile and Brick Company. The plant is located near Willard, Kan., a small town west of Topeka, Kan. The stockholders of the new company are prominent business men of that place and Topeka. The company has been incorporated for $25,000 and granted a charter. The officers are: T. E. Armstrong, President; W. R. Blackburn, of Willard, Vice-President; C. M. Hossack, of Willard, Treasurer; E. E. Fourt, Secretary and General Manager. As soon as possible additional machinery will be installed for making vitrified paving brick.

Announcement has been made that the Hocking Valley Brick and Terra Cotta Company, Nelsonville, Ohio, has closed a contract with New York contractors for the sale of 60,000,000 bricks, which will be the entire output of the company for the next two years. The contract calls for a good quality of pressed brick, which will be the product of the concern. The company was incorporated April 21, with a capital stock of $300,000. It absorbed the property of Charles L. and John C. Baird, of Nelsonville, who are directors in the new company. Additional kilns will be erected and a large boiler and engine will be placed in position to accommodate the growth of the business. The plant, when it is enlarged, will have a capacity of 100,000 daily. The offices of the company will be established at Columbus, Ohio, as soon as the improvements are well under way.

Martin W. Laurer, manager of the American Clay Product Company, Chicago, Ill., has sent the following announcement to the trade:

"We beg to advise that we have moved our office to Suite 515, Roanoke Building, No. 145 La Salle street, our new telephone number being 'Central No. 6918.' In our new offices we have more space and are better prepared to handle our growing business. Having more space at our command, we expect to make an exhibit of the material which we handle and shall avail ourselves of every facility tending to secure new business, as well as retaining of the old customers."

H. C. Chamberlain has opened a new brickyard at East Klamath, Ore., where he has found a superior clay, and will burn at the earliest possible date a 500,000 kiln.

O. A. Derrough, of Champaign, Ill., who was formerly a manufacturer of brick and tile, writes that he desires to get back in the harness, and would like to buy a moderate-sized plant, preferably in Iowa.

The Harlem Valley Brick and Supply Company has been incorporated with a capital stock of $30,000, to manufacture brick at White Plains, N. Y. The directors are Andrew J. Mathewes, George W. Mathews and George J. Cox.

F. W. Dennis, builder of up and down draft kilns, Norfolk, Va., writes that he has just finished some kilns for the Fulton Brick Company, Richmond, Va., and they are highly pleased with them. He has several other orders on hand that will keep him busy for the rest of the year.

The Schuylkill Pressed Brick Company has been incorporated by Rev. H. A. Weller, of Orwigsburg, Pa.; F. B. Keller and W. F. Oswald, of Schuylkill Haven, Pa., and F. J. Ryon, of Pottsville, Pa. A tract of land has been purchased, on which a large plant will be established for the manufacture of pressed brick.

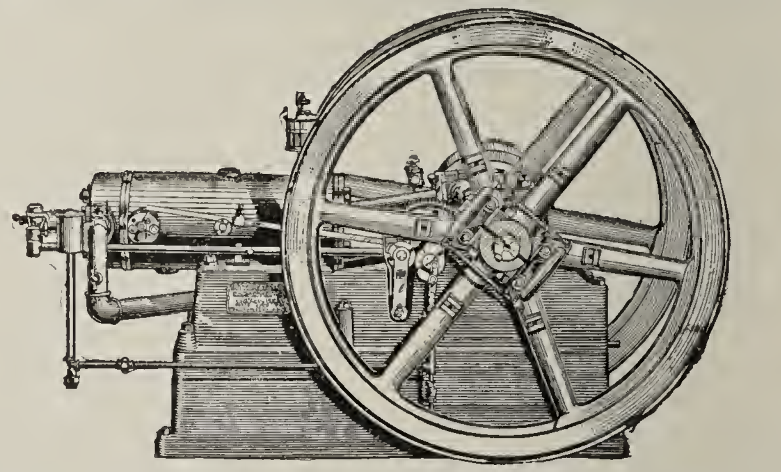
In Kansas City, Kas., the gas people have made a cut in the price of gas for the manufactureers from ten cents to eight cents per 1,000 feet. This will be good news to brick manufacturers. Two plants located on the Kansas side are now using gas as fuel, and there is a considerable chance that others will be attracted by this fuel proposition.

In a recent letter, Ben H. Richards, President of the Richards Brick Company, Edwardsville, Ill., says: "We have no complaint to make of our business so far, our output being taken with a good bunch of orders ahead. The only drawback is the prices we get are not in keeping with the wages paid. However, we hope this will soon be adjusted and that we are not singing, 'There's a good time comnig,' in vain."

You Want Dependable Power
Behind Your Machines.

That's the kind of power you get in an

I. H. C. Gas and Gasoline Engine.



The power is always there, ready to respond to your immediate need, your constant need, your every requirement.

Made in the following styles and sizes:

Horizontal Engines—
Stationary 4, 6, 8, 10 and 15 h.p.
Portable 6, 8, 10 and 15 h.p.
Vertical 2, 3 and 5 h.p.

We would like to show you why
—An I. H. C. engine is more dependable than any other.
—Is more economical than any other.
—Easier to operate and control.
—More strong, safe and durable.
—More thoroughly adapted to your particular needs.

For Fuel Use Gasoline, Gas or Denatured Alcohol.

SEND FOR THE CATALOGUE.—It will protect you against future loss and disappointment.

INTERNATIONAL HARVESTER COMPANY OF AMERICA

(Incorporated) No. 7-J J-Monroe St., Chicago, Ill.

Written for The Clay-Worker.

BRICK NEWS FROM CLEVELAND.

AN UNPRECEDENTED CONDITION of affairs exists in Cleveland in regard to the common building brick business. While not exactly suffering from a famine, the city is using every brick which is being turned out at the thirteen plants. With the announcement that there has been a decline in the price of brick in other large cities, due to the use of concrete, comes the statement in Cleveland that the price remains firm, and if the demand continues there is a possibility of a slight advance. There has not been a change in the price of brick in Cleveland in three years. It continues at $6.50 and $7.00, despite the fact that the cost of production has materially increased during that time.

Brickmakers agree that concrete construction is forging ahead and somewhat eclipsing the use of brick for some purposes, but that fact in no way dismays them, for in Cleveland brick is held at a premium, so great is the amount of building which is under way. This year promises to be a record-breaker in several respects. According to statistics compiled by the building inspectors of the city, 4,383 permits have been issued for the first seven months of this year, as compared to 4,976 for the whole of last year. The estimated value of permits already issued reaches $12,500,000, which is a third greater than for the whole of last year. Last year broke all Cleveland records. It is stated by the building inspectors that the increase is due to the erection of the large number of dwellings. Brick dealers agree that they are getting more than their share of the business, due largely to the strict fire limits in Cleveland. The estimated permits for this year has been placed at 6,500. There are no "skyscrapers" included in the work this year.

While the building brickmakers are reaping a harvest the paving brick men are also jubilant, for the demand is heavy and the price has advanced. The city of Cleveland plans to pave 197 streets next year and steps have already begun to fix tax assessments so that there will be no delay next spring when the work is to start. About fifty-five miles of brick streets will be laid in the city next year. A fair average for the past five years has been twenty-five miles a year. All of this brick will be supplied by paving concerns located in or near Cleveland.

In the sewer building line the general prosperity is quite as noticeable. While all of the sewers are not built of brick, much of the pipe is secured through firms handling both products. Seventy-two regular sewers have been completed, and twenty-two are at present under construction. Thirteen private contracts have been completed and four are about finished. It is expected that the city will build 100 more sewers this season. Work on the big intercepting sewer is being pushed rapidly along.

The County Commissioners of Cuyahoga County are having brought to their attention that it pays to repair their beautiful brick roadways throughout the country district surrounding Cleveland. These brick roads run out in all directions and are being added to every year. In the rush and turmoil of getting new roads down the work of repairing those already laid has been neglected. At a recent meeting it was agreed that steps should be taken to keep all the county's brick roads in good repair, instead of permitting them to relapse through lack of attention.

The trade school for bricklayers has proven such a huge success that various other trades in Cleveland will attempt the experiment. Already a number of creditable bricklayers have graduated from the school and have been put to work after four months' experience. For the rough work the contractors say that they are equally as good as men who have worked at the business for years. A new class is now in course of preparation and will graduate in a couple of months. A special committee of the Cleveland Builders' Exchange has been appointed to consider the feasibility of extending the idea to all other trades where the lack of apprentices is keenly felt. Data is being secured from trade schools in other cities and a report will be made in a short time.

The Robinson Clay Company, of Akron, Ohio, has had plans prepared for the erection of one of the largest warehouses in Ohio. The structure will be 400 feet long, 175 feet wide and four stories high. It will be built of reinforced concrete, with brick walls.

Buckeye.

100% Perfect
There is really only one perfect Concrete Block Machine and that's the Hercules.

AN IRISH CONTRACTOR IN IRELAND

bought a Hercules early in 1905. Later he bought two more, and a few months ago he ordered four more.

What does this prove? It proves that the Hercules delivers the goods—that it makes absolutely perfect blocks. You can only fool an Irishman once, and if the first Hercules was not satisfactory the other orders would not have followed.

Why did the Contractor who is building the immense power station for the N. Y., N. H. & H. Railroad at Cos Cob, Conn., order Hercules Machines to do the work with?

Because after a thorough study of every other Concrete Block Machine he convinced himself that the Machine that would make the most perfect blocks and make them the most economically was the

HERCULES CONCRETE BLOCK MACHINE.

If you are going to buy a Concrete Block Machine and you want the very best to be had, you've got to buy the simple Hercules, the machine that makes two blocks at one time—the machine that an unskilled laborer can easily operate.

You tamp directly on the face with the Hercules, thus insuring a perfect design, which looks exactly like natural stone. By our method of tamping on the face with a big flat tamper, the maker can turn out the strongest blocks. He can also effect a great saving by using a 2 to 1 composition for the face of the stone and a 5 to 1 for backing.

The Hercules can produce more blocks, a larger variety of blocks and better blocks in one day than any other machine and produce them for less money.

Isn't that the kind of a machine you want? If it isn't, your competitors will have a walk-over.

Send for our beautifully illustrated **CATALOGUE V.**

CENTURY CEMENT MACHINE CO., 288 West Main Street, Rochester, N. Y.

FOR SALE, WANTED, ETC.

Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than $1.00.

WANTED—A thoroughly reliable and practical man, competent to take charge of a sewer pipe plant in the West. Address
CLAYTON, care Clay-Worker.
8 1 d

FOR SALE—Cheap. One Drake stiff mud 30,000 capacity brick machine; one J. D. Fate hand side-cut board delivery table. Price, $250. Address, J. H. FRANCIS,
8 1 c Peoria, Ill.

FOR SALE—One Monarch No. 6 brick machine in good condition. Will sell same at a reasonable price. For particulars, address, JOS. H. STEINEMANN,
8 1 cm Sidney, Ohio.

FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.
THE T. B. TOWNSEND BRICK AND CONTRACTING COMPANY,
5 tf d Zanesville, Ohio.

SAND LIME BRICK.

WANTED—Competent man to superintend installation of sand-lime brick plant and start same. State experience, ability and references. Address, SYSTEM,
8 1 dm Care Clay-Worker.

FOR SALE—At a bargain. A Crossley Clay Mixing and Washing Machine No. 2. Capacity 1,500 pounds in ten hours. A Complete Slip House Plant in one Machine. In perfect order; has been used very little. Address, SLIP HOUSE,
8 1 dm P. O. Box 153, Trenton, N. J.

WANTED—A position as superintendent of brick plant by a man having been interested in the manufacture of various kinds of brick for a number of years. A machinist by trade, especially successful in burning, and thoroughly understands the handling of all kinds of labor. Address,
SUPERINTENDENT,
8 1 d Care Clay-Worker.

FOR SALE—Modern stiff mud brick plant. Practically new and in good condition. Large drying sheds. Three good clamps. Best of new machinery. Capacity 30,000 per day. Best reasons for selling. Address,
CARTHAGE BRICK CO.,
8 1 cm Carthage, Texas.

FOR SALE OR LEASE—The entire plant of the Bloomfield Brick & Tile Mfg. Co., consisting of brick and tile making machinery of the latest manufacture. Seven acres of land, a well equipped saw mill, tools for both factory and mill. Good location. Address,
BLOOMVILLE BRICK & TILE MFG CO.,
8 1 dm Bloomville, Ohio.

WANTED—Situation as a brick burner, with 20 years' experience in burning brick in Germany. Do not speak English readily, so would prefer employment with those speaking German. Permanent position desired. Will render good service and give best of references. Address,
STEPHEN BODJAK, R. F. D. No. 2,
8 1 cm Box 5, Butler, Pa.

WANTED—An all-around good mechanic, one who has special knowledge and experience in brickyard machinery, and has successfully operated stiff mud machine, preferred. A permanent position with good pay for a man who will be content to live in a small town. Address,
PARKER,
8 1 d Care Clay-Worker.

WANTED—Position as superintendent in brick plant, by man who understands soft mud, stiff mud and dry press machinery; up draft, down draft and continuous kilns. Can build kilns or dryers or erect machinery. Am energetic, good handler of men; have had twelve years' experience as superintendent in best brick plants in country. Best of references. Address,
PRACTICAL, care Clay-Worker.
8 1 c

MYERS & KERR, TORONTO, OHIO.

Practical kiln builders. Special attention given to tunnel driers, pan and boiler setting and all work pertaining to brick and sewer pipe factories.
4 6 c

FOR SALE—A well equipped brickyard located in Northern Minnesota. Capacity 50M per day. Good reason for selling. Address, MINN,
8 tf d Care Clay-Worker.

FOR SALE—E. M. Freese & Co., Union brick machine, special size with pug mill combined. Automatic cutter and friction clutch pulley. Address, EGGERS BRICK CO.,
5 tf d Cleveland, Ohio.

FOR SALE.

New 30,000 capacity brick machine and 8 acres of land in county seat on railroad in Alabama. Address JIM MILLER,
7 2 c Marion, Ala.

FOR SALE—20,000 ft. inch steam pipe; one Henry Martin common brick machine; seven Carnell represses; one 125 h. p. boiler. Address
PAUL W. WILLIAMS,
7 6 cm Glens Falls, N. Y.

FOR SALE.

Thirty-five 9-slat, 22-inch gauge dry cars. These cars are new and have never been used. Address,
TULSA VITRIFIED BRICK CO.,
7 tf dm Tulsa, Ind. Ter.

WANTED—A first-class manager, who is experienced and is a hustler. for a well equipped brick manufacturing plant. Good sale for output and a money-maker. Would sell some stock in the plant to a satisfactory manager. Address
"OPPORTUNITY,"
6 4 cm Care The Clay-Worker.

WANTED—Position as manager or superintendent of brick or tile plant, by a young man of good habits and who has spent several years in the clay business. Permanent position desired. Address,
PLAIN, care Clay-Worker.
8 1 dm

WANTED—First-class man as superintendent for a stoneware plant. Plant has five kilns, and located in a pleasant city. Will pay first-class salary provided man can produce first-class ware. No one need apply who cannot show ability by references. Address "B," Care Clay-Worker. 5 4 dm

---

WANTED—Position as manager or superintendent of brick works. Twenty years of continuous service. At present and for the past eight years with large paving brick company in the East, paving block, dry press and stiff mud. Wish to change location. Address P. B. L.,
8 1 c Care Clay-Worker.

FOR LEASE.

In order to put my yard in the hands of a practical brick man, will lease same for the balance of the season very cheap For further particulars and description see my adv. in April Clay-Worker. Address,
W. O. BACON,
7 1 dm Greenwood, Miss.

FOR SALE—A common building brick plant; one soft mud machine outfit in good condition; two miles from a city of 40,000 people; railroad switch into the plant; only one other plant in the vicinity. A bargain and on reasonable terms.
P. O. BOX 28,
Rensselaer, Ind.

WANTED—We desire to interest a man experienced in the manufacture of vitrified paving brick in a manufacturing business at Fort Smith, Ark. The undersigned have a contract calling for 40,000,000 paving brick. We purpose immediately erecting a plant for the manufacture of brick, tile and sewer pipe. Address,
BURKE BROS.,
8 1 cm 5877 Bartmer Ave., St. Louis.

FOR SALE.

One New Haven soft-mud brick machine.
One automatic sanding machine.
75 iron cars with iron racks, each holding 360 brick.
One 40 h. p. engine.
One 50 h. p. boiler.
Iron trackage, shafting, etc.
Will sell at great sacrifice.
OGDEN BRICK CO.,
7 tf dm Binghamton, N. Y.

FOR SALE—A well equipped yard; good market; good prices; good clay. Direct waterway to the Gulf. Will sell, lease or take interest. Address, BRICK,
2 tf dm Care Clay-Worker.

FOR SALE—Iron Quaker brick machine, with power gearing; 15-horsepower gasoline engine. Both in good condition and will sell separately. Address
FRED T. JONES,
Care Security Savings Bank,
6 3 c Columbus, O.

WANTED—Concerns looking for clay or shale deposits suitable for pavers, building blocks, tile or sewer pipe, to correspond with the Commercial Club of Fort Dodge, Iowa. No promoters, traders or bonus hunters need apply. Address
J. E. DOWNING,
6 3 cm Secretary.

ENGINES AND BOILERS.

A large assortment of new and rebuilt engines and boilers, all sizes and styles, at low prices. Send specifications of your requirements and we will make you a special proposition.
THE RANDLE MACHINERY CO.,
5 tf dm 1735 Powers St., Cincinnati, O.

FOR SALE—An interest in my brick and tile plant, to one of experience who can take charge and run it and is able to invest some money. Plenty of good clay at back door and good market at front door. This is an opportunity that you don't often run up against. Plant now running. Come and see or write,
S. H. RECORD.
8 3 cm Charleston, Ill.

FOR SALE CHEAP.

One Iron h. p. soft mud machine.
One Iron steam power soft mud machine.
One Hand repress.
One disintegrator.
One 35-h.-p. Boiler and one 25-h.-p. Engine.
Second-hand dryer cars for sale cheap.
All in first-class condition.
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THE CLAY-WORKER

THE OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

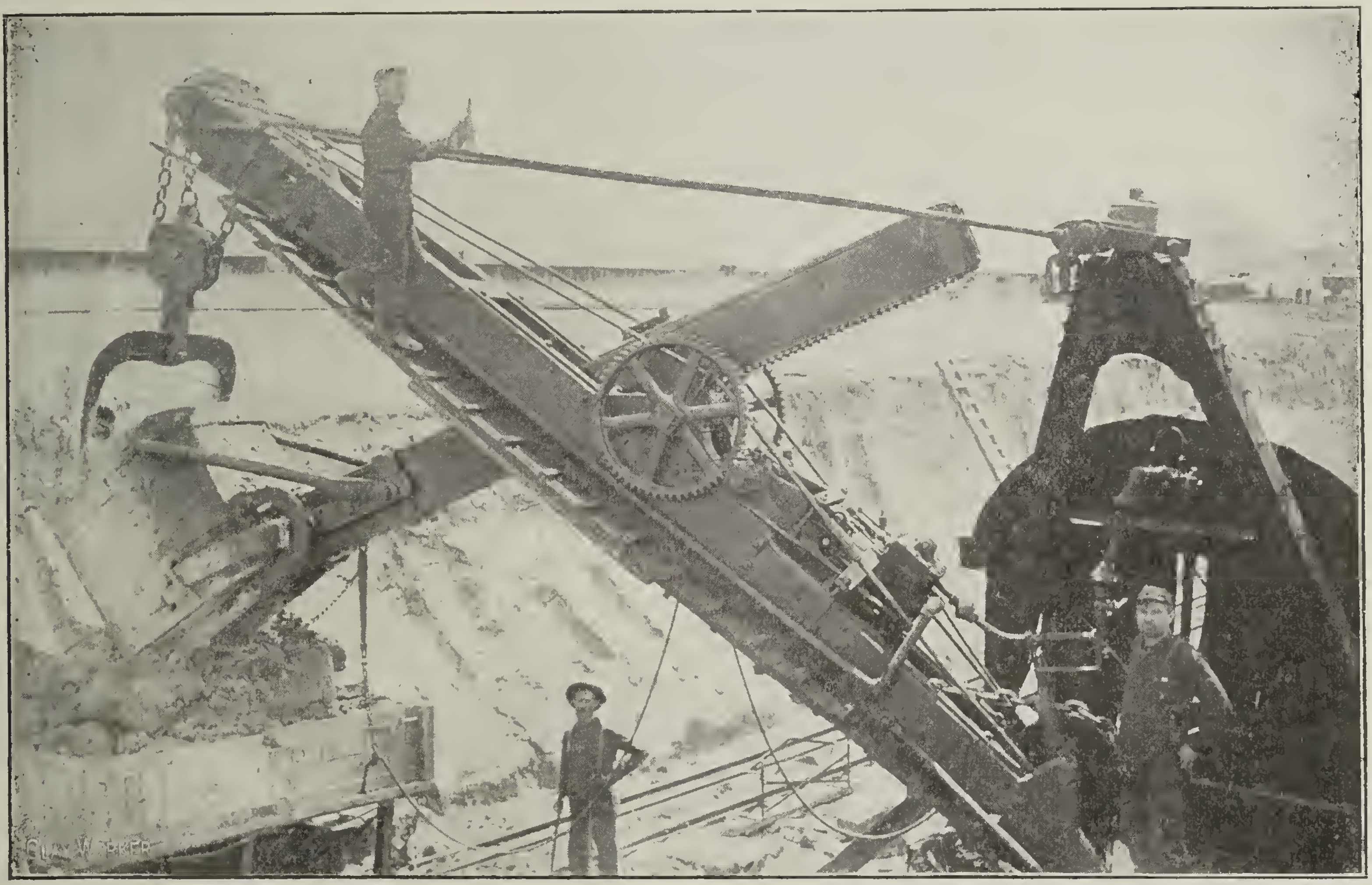
Vol XLVI. INDIANAPOLIS, IND., SEPTEMBER, 1906. No. 3.

Written for THE CLAY-WORKER.

LARGE CAPACITY BRICK PLANTS.

Chicago's Latest Enterprise in the Brickmaking Line.

WHATEVER CHICAGO starts out to do, she does a little faster and a little larger and, sometimes, a little better than is the rule anywhere else in the world. It has been claimed that her brickmakers make more brick per machine per day than are made by brickmakers anywhere else on this mundane sphere. Indeed, it might be a good plan for some mathematician to figure out how long it would take to convert the whole world into an everlasting, indestructible sphere of brick if the business was carried on in the same proportions elsewhere as in and about the Windy City. That the readers of THE CLAY-WORKER may form some idea of the swift pace that prevails here, we will now take a stroll through one of the latest, largest and best equipped of our common building brick plants—that of the National Brick Company, at Chicago Heights, which is one of three plants recently completed by that company, each having a daily capacity of 400,000 brick.



The Steam Shovel at Work in Yard A of the National Brick Company, Weber, Ill.

The Chicago Heights plant, in its planning and running, shows throughout the master hand of Bernard F. Weber, known throughout the State as a successful politician in the days when he was a member of the State Legislature, whose motto has always been, "Have the goods; then go ahead." In the plant at Chicago Heights he has the goods, and he is going ahead in the most approved manner.

He started in by finding just the sort of clay he wanted and the kind of location he wanted for his pit and plant, and then bought a tract of eighty acres to be sure he got everything needed, and would not be curtailed nor interfered with in the developments of future years. Working at top capacity, he calculates, he has fifty years of clay ahead of him.

Thus far his pit and plant occupy only the lesser part of his "farm," and he has let out the remainder for agricultural purposes. The field in which Mr. Weber is working his pit slopes off from the top of a knoll to a creek, thirty-five feet below on one side. So soon as the steam shovel has cut through the crest of the hill the pit will have a natural drainage, pumps will be unnecessary, and it will be possible to work it freely, even in wet seasons. The clay itself is unusually dry.

The plant had been in commission about a month when The Clay-Worker's correspondent visited it. It had rained hard for more than an hour before he arrived at the plant, and yet the clay was being taken from the pit without cessation, and so dry was the earthy material that it was necessary to use the sprinkler, which works almost constantly above the pulverizer in order to get the clay into the proper consistency to mix and send through the mill below.

The top capacity of the plant is 400,000 brick per day. At the date of the visit, the plant was running a trifle under this schedule, although there was great activity in every department. The fact that the plant has been put up for big business is illustrated by the kiln shed, 1,700 feet long, with a capacity of 20,000,000 brick.

One of the particular features of the plant is the electric third rail railroad, over which the clay handling cars between the pit and the hopper of the pulverizer travel unconducted. No one rides on the cars to operate the motor or apply and release the brakes, and this in spite of the fact that the ascent from the level, at the mouth of the clay pit, to the level of the hopper is considerable, and that at present this part of the track is the longest of the electric railway.

One of the particular features of the plant is the third rail road, over which the clay handling cars between the pit and the hopper of the pulverizer travel unconducted. No one rides on the cars to operate the motor or apply and release the brakes, and this in spite of the fact that the ascent from the level, at the mouth of the clay pit, to the level of the hopper is considerable, and that at present this part of the track is the longest of the electric railway.

Approaching through the fields, one sees a car going down the incline toward the mouth of the pit, while another is going up. Then other cars appear going in both directions. Climbing the hill and looking into the pit, one sees the downbound car check its speed as it strikes the descent into the pit; slow down as it approaches a point where down and up tracks converge; stop until an up car has cleared the line of single track; then shoot forward again and come to a stop at the end of the line beneath the walls of the pit. The huge steam shovel scrapes up its load and deposits it in the car, which, filled, begins the journey up the incline.

Crossing the bit of level ground, it strikes the trestled incline toward the shed. A cog-wheel beneath the car catches a ratch running between the rails, and this aids the toiling ascent of the loaded car. Another car is being unloaded at the hopper and a collision seems imminent, as the car behind comes over the "brow" of the incline, but with almost human intelligence, car No. 2 stops, apparently of its own initiative. Then the car ahead being sent out of the way, it moves on toward the hopper. The third rail at the left side of the up track rises abruptly before the hopper is reached, carrying the brushwheel on the car up with it and tilting the box of the car, so that the load rolls off into the hopper. When the box is tilted the car stops until the car is emptied, then it rolls past the hopper, the third rail striking the level again.

The cars which travel thus mysteriously are operated by a man in the hopper shed who, by a series of switches, shuts the current on and off various sections of track. The motors on the cars are reversible by moving a lever, projecting from the side, up or down. On leaving the hopper stand, the car moves past a switch and past an iron bar, so bent as to catch this lever and raise it, thereby reversing the motor, and sending the car back again onto the switch it has just crossed, and so into the down track. Another ratch extends along the incline between the rails of the down track also; but here the cog beneath the car gets a reverse motion which reverses the motor, sends the current into a resistance coil and sets the brakes. At the bottom is a stand similar to the one at the shed terminal, except that it bends in the opposite direction, and by this the motor is again reversed.

From the entrance to the pit to the place of loading the track is controlled by levers which a man in the steam shovel operates.

The clay is not only pulverized, but before being mixed with the screenings to make it burn better, the stones are automatically cast out. Thoroughly mixed, the clay is shot down to the machines and thence out on the traveling trays to the men who load them onto the pallet cars ready for the dryer.

There are eighteen tracks in each dry-room for the pallet cars running into the dryer, which has a capacity of 450,000. The hot air from the boilers is conserved in great hoods above them and forced by huge fans through the dryers, where a temperature of from 200 to 250 degrees Fahrenheit is maintained. From the other side of the dryer the dried brick are taken out and wheeled into the kiln shed, where they are stacked for burning.

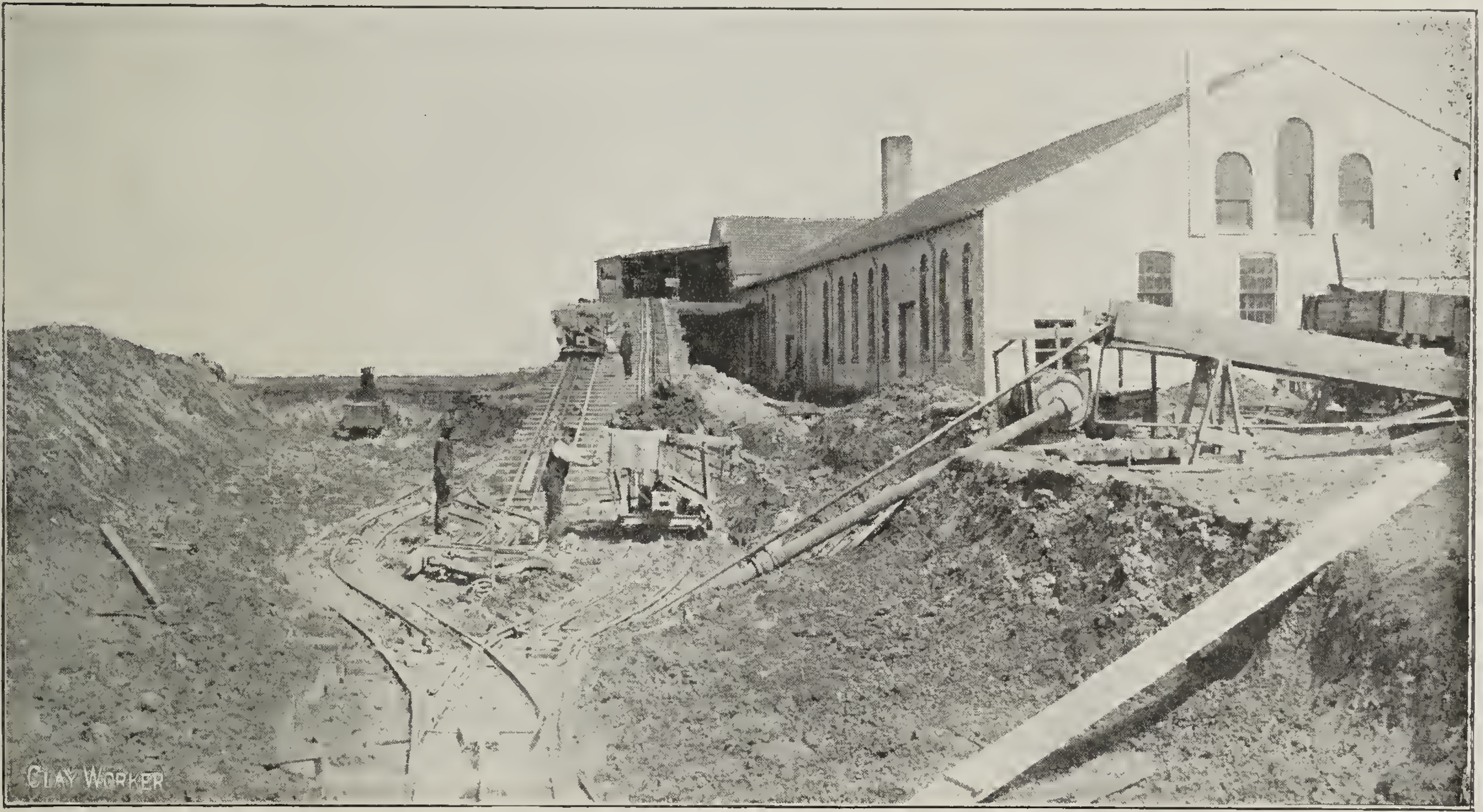
Bernard F. Weber, President and General Manager, National Brick Company, Chicago.

In addition to this the exhaust steam is utilized and forced by means of a vacuum pump through 25,000 lineal feet of 1-inch steam pipes arranged in the dryers along the sides of the cars which contain 700 brick each. Eight hundred of these cars are used at each of the plants.

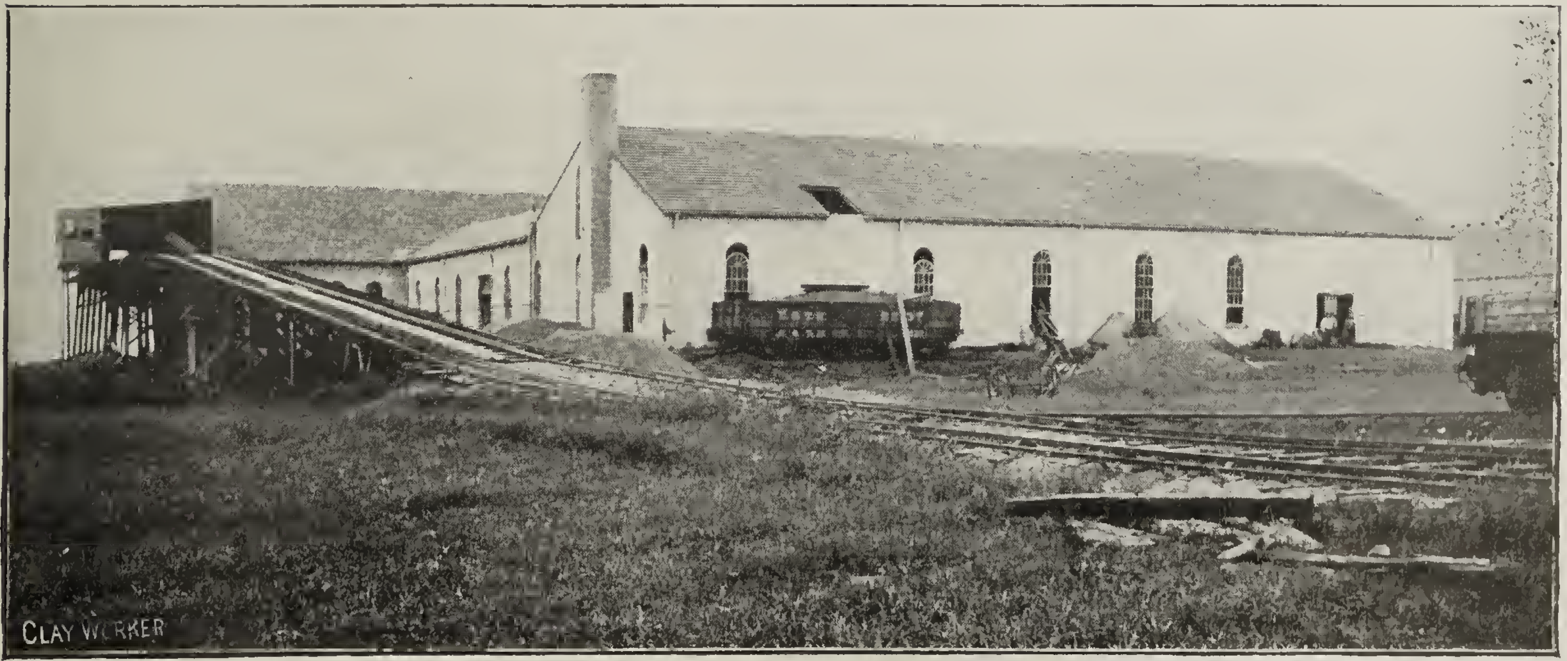
Mr. Weber uses oil for burning and steam from the boilers to force the vaporized oil into the kilns, and here again his individuality asserts itself, for the system of oil jets used are his own patented invention. He burns each kiln on an average of sixty hours.

The machinery in this plant was furnished by the Chambers Brothers' Company, and is the best of the high grade common brick machinery made by them. Lemley & Schultz had charge of the erecting of the machinery. The engine

Clay Pit Yard B, National Brick Company, Maynard, Ind.



Getting in the Clay at Yard A, Weber, Ill., Illustrating the Character of All the "National" Yards.



A Portion of Yard C, Chicago Heights, Third-Rail Railway in Foreground.

was furnished by the Allis Chalmers Company, and Hauser & Co. supplied the clay handling cars and the dynamo. The pulverizer, considered one of the best in use, was put in by the Frost Manufacturing Company. The Brownell Company, of Dayton, Ohio, put in the boilers, and the Platt Iron Works, the heater and pumps. The Jones and Laughlin Steel Company furnished the iron and the Moravia Construction Company did the iron work on the thoroughly fireproof building.

Otherwise the buildings were erected by the company. Ludowici tile—the plant is only a few rods from that of the National—was put on the roofs. The National Blower Company of Milwaukee, Wis., put in the fans; the John Davis Company, the pipings and steam fittings, and the Greene Engine Company, the stokers.

The coal elevators are not quite completed, which, together with the stokers and coal hoppers, will make this portion of the plant so thoroughly automatic that not a pound of coal is handled by human effort until consumed and turned into steam, when nothing but ashes and refuse is taken out of the boiler room on wheelbarrows.

The office building is still to be put up, and there are some minor finishing touches not yet reached, but it is "doing the business" from the start, and, after all, that is the main thing. The other new plants of the National Brick Company are on the same general style as the model plant at Chicago Heights. The Heights plant, however, is hard to beat for transportation facilities, with the C. & E. I., the Chicago Terminal Transfer, the Elgin, Joliet & Eastern and the Michigan Central running practically past the doors.

SCRIP.

AN IMPORTANT EDUCATOR.

That a trade paper can be of great worth to the line of business it represents goes without comment, and its worth can be measured in proportion to its use. By this is not meant the total issue printed and circulated altogether, but the total number of its interested readers. This information can not be easily obtained, but it is a well-known fact that a trade paper has vastly more readers than subscribers. There are several reasons for this. One reason is that a tradesman who thinks that he can not afford to subscribe for one of his trade papers will borrow his neighbor's. He is like the man without a watch. He wants to know the time, and to learn it he must consult the watch of another man. Another method by which extra readers are gained is through the proprietors or managers of establishments. They realize the worth of a paper akin to their business, and will often pass their trade papers around among their employes. Some firms go further and will subscribe for a dozen or more of these papers and distribute them among their employes. They do this because they want keen, bright, well-read men behind their line of business, and the trade reviews sharpen these virtues. The public libraries also realize their value, and are among the great patronizers of the trade press issues, and supply their shelves liberally with them. There they are read and re-read by a large number of trade people. Many expert tradesmen, who have risen from the ranks, will admit that they owe their success, in a large measure, to the keen interest with which for years they have followed the progress and policy outlined by the leading papers of the trade of which they were a part.—Trade Press List.

The Chicago Way of Taking Brick from Kiln to Car—Yard A of the National Brick Company, Weber, Ill.

Most men make fools of themselves without much apparent effort—and other men expend lots of effort to make fools of other people.

Written for THE CLAY-WORKER:

IMPORTANCE OF HOLLOW AND FLAT BUILDING TILES.

By A. S. Atkinson.

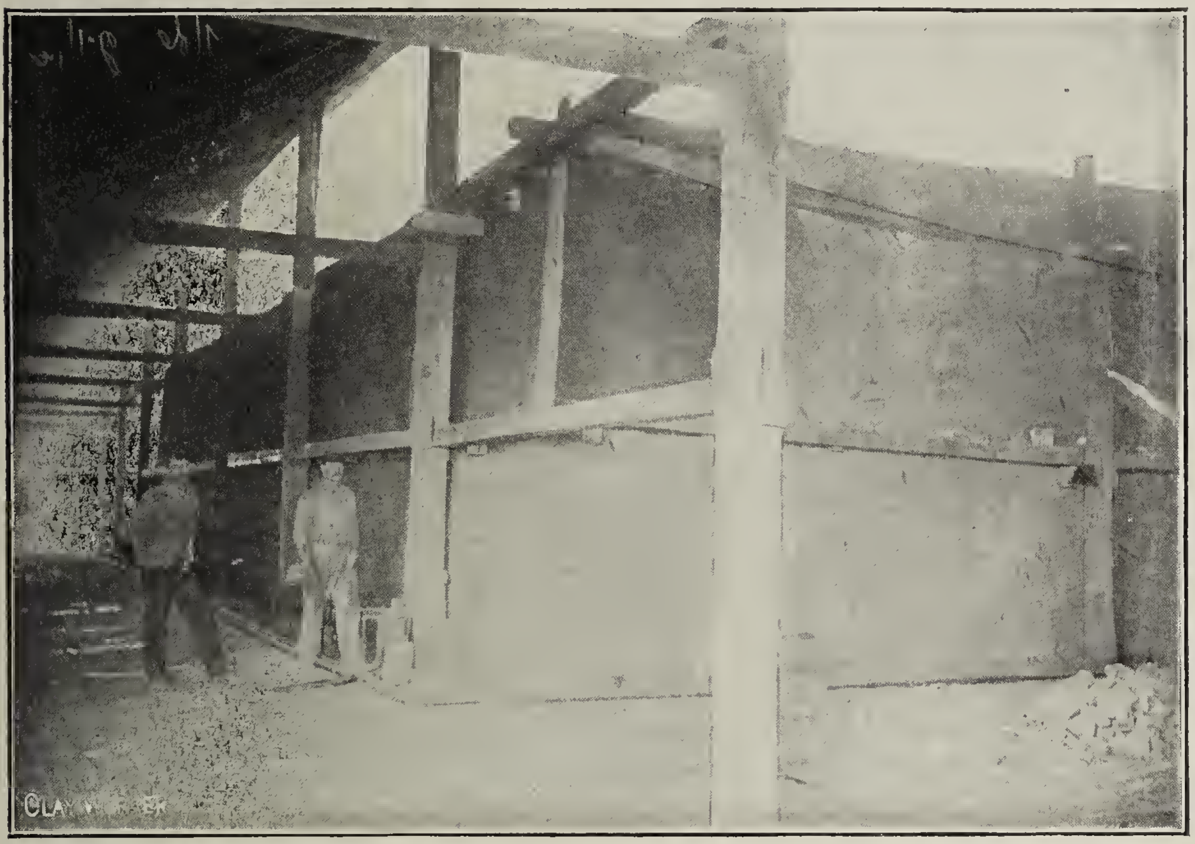
THE FIREPROOF CHARACTER of American buildings is such as to cause some of the insurance journals to dub our country "Combustible America." A recent compilation of fire losses by an expert authority showed that for 1905 the total destruction to property from fire exceeded $150,000,000, while 1904 reached the enormous total of $230,000,000. This does not necessarily indicate that our buildings have undergone a radical improvement in one brief year, but that in 1904 we had the disastrous conflagrations in Baltimore and Rochester to swell the fearful loss. It shows that a repetition of these fires may happen any year, and the fire insurance companies feel confident that almost any year the total fire losses may exceed those of 1904.

The remedy for this is simple, and it is already being applied more or less successfully in different parts of the country. By building fireproof houses in towns, villages and cities the fire losses could be materially reduced, and in the end the results would be highly gratifying. The campaign now for fireproof houses of all sizes and character is being conducted earnestly and intelligently by architects, insurance men, business men and householders. It is probably more important to interest owners of property and architects in the fireproof movement than any other class. Insurance underwriters know already the value of fireproof houses, and they need no education in this field; but the average builder and architect must face the necessity of building more substantial houses so that fire will no longer become the great menace to our cities that it is today.

Practically and theoretically the only fireproof materials suitable for constructing fireproof buildings are burnt clay tiles, bricks, terra cotta, and concrete. All other building materials can be used in conjunction with these, but the burnt clay products and concrete must be the essential foundations of the fireproof protection. The modern steel frames of our large office buildings are needed simply to carry the load and not for protection from fire. They require a fireproof coating inside and outside to protect them from fires, and unless thoroughly safeguarded by porous terra cotta blocks, concrete, burnt brick, or terra cotta, they will warp and twist in the first hot fire and cause a collapse.

Fireproof construction is based upon very simple laws, and it is not too difficult for any man to grasp. Manufacturers of burnt clay materials have today placed within the reach of architects and contractors fireproof building materials with which they can work with comparative ease and simplicity. Lumber has advanced rapidly in price in recent years, and the wooden structure should soon become a past number. Brick houses can be built almost as cheaply as wooden houses, and in some sections of the country a trifle cheaper. Machinery and improved methods of manufacture have made bricks the best and cheapest building material of the country, and the man who builds a wooden house today is behind the times.

The only possible excuse for such an undertaking has been that more artistic effects could be obtained with lumber. Architects have been largely at fault in this respect in the past. They have failed to use the bricks, tiles and terra cotta products to the full extent of their value. There is a hopeful sign of improvement in this direction. Architects are designing brick and tile houses today which completely disprove the idea that just as beautiful structures cannot be made of clay products as of lumber. Competitions conducted by a number of the architectural papers and associations have brought forth designs of houses which have more pronounced characteristic features of beauty than those which used lumber. It is this development of the artistic side of the modern building in brick and tile which will prove an important factor in converting the majority to fireproof homes. The architects must co-operate with manufacturers of clay products to make this fireproof movement a real and lasting improvement. The average house builder must to a large extent rely upon the architect for his guidance and judgment for plans and materials.



Firing a Kiln With Fuel Oil at Yard A, Weber, Ill. The Same System is Used at All Three Yards.

The movement to build only fireproof houses is of the utmost importance to manufacturers of clay products, for present conditions must improve only so far as the makers of fireproof building materials exert themselves to supply what is needed. The manufacturer who does not keep in touch with the building movement must of necessity fail to meet with the greatest success. Architecture changes with the times. The demand for new styles and variety of houses is constant, and architects are slowly working out the problem of a national architecture. But this demand for new types of houses is not greater than the demand for new materials. Variety is obtained in building materials fully as much as in the design of the houses.

When the architects had only a few common bricks to work with it was natural that their use was limited chiefly to factories, stores and cheap, unpretentious houses. With the improvement in the variety and shapes of bricks there came a greater employment of them in more ambitious types of houses. Today with different colored bricks, hard burned, face-enameled, and various other kinds of bricks, the architect can give variety and form of distinctive character to the houses he plans. Bricks can in nearly all cases be used almost as artistically as lumber, and with terra cotta ornaments for trimmings the aesthetic effect is enhanced to a greater degree.

Manufacturers of terra cotta products have to a large extent revolutionized their industry within the past decade. Terra cotta ornaments have increased rapidly, and their use on city skyscrapers and smaller buildings has grown remarkably. The manuafcturers have worked to secure results which would please the most fastidious tastes. As a result, ornamental terra cotta today has a field for development which no other material is likely to usurp. It is rapidly displacing stone, granite and marble for the skyscrapers and office buildings. Owing to its comparative lightness, fireproof qualities and handsome appearance, it is likely to become the universal material for exterior ornament. With this knowledge well in mind manufacturers are increasing their plants, co-operating with architects in designing material that will answer the demands of the day and anticipate those of the near future.

Manufacturers of bricks and flat and hollow tiles may study the needs of the building trade in a similar profitable way. A special type of brick often proves more profitable as an investment than any other. While competition in the manufacture of the common types may grow keen, the worker who produces handsome ornamental bricks from the best of clay usually secures rewards from which strenuous competition is excluded. Our clay deposits are still far from being thoroughly exploited. Combinations of new clays to produce new coloring effects, and the employment of new machinery to turn out various sizes and shapes of bricks, may produce important results in this field. Artistic finish must be emphasized as much as any other feature.

In the construction of hollow and flat tile houses, used in combination with a veneer of bricks, there is need today of improved grades of material which will withstand great pressure. The small town and country house must eventually be built of bricks and terra cotta fireproof blocks and tiles or of concrete blocks. There is no other material which can equal these from a fireproof point of view, and they can, furthermore, be combined so artistically that no lines of beauty need be lost. Structural steel manufacturers are today working with this end in view, and light sections of steel beams and channels are being designed to take the place of ordinary wooden frames. These steel beams and frames will be rolled so thin that they can be fitted and drilled with the ordinary hack-saw and breast drill on the building site. They will be employed simply to carry the floors, roofs, and similar loads, while floors, partitions and walls will be constructed of bricks, tiles and hollow terra cotta blocks. The house will thus be rendered fireproof throughout, and the danger from interior or exterior fires will be reduced to a minimum.

But there is need for greater strength in many of the flat clay tiles and bricks of a fireproof character for this work. In the recent construction of homes and arches of flat tiles laid on edge in Portland cement, architects have revived one of the arts of the early builders, but it has been possible to carry this work to its present perfection only through the manufacture of extremely hard, strong clay tiles. These tiles have a breaking strength of over 2,000 pounds to the square inch, and even at this there is a field for further improvement. It is possible to increase this breaking strength up to 2,500 to 3,000 pounds and make the tiles so fireproof that they will not expand and crack in temperatures below 2,000 degrees.

Heretofore the clay tiles and blocks have been employed almost exclusively for fireproofing iron and steel and for light partitions. Their tensile and breaking strength were not of material importance. No heavy load was carried by them, and their function was served when they protected the steel frames. But this is not the end of fireproof tiles and blocks. They are being introduced more and more into the body of the building, and they are employed to carry the loads of floors and walls. Competitions for houses built of hollow clay blocks and flat hard-burned tiles have opened a wide field for experiment. The flat tiles can be used for carrying loads almost as great as steel frames. On the roofs of buildings and on the upper stories of skyscrapers, where weight of building material is an important factor, fireproof tiles with great strength are employed with great success. They do not add to the weight of the upper stories nearly as much as stone, iron and similar materials.

American clay tiles have reached a great breaking strength, which makes them of special usefulness, but their weight is still too heavy for many building purposes. The question of weight is largely one of material. Both tiles and bricks should be reduced in weight to increase their usefulness. In the great cupola of St. Sophia tiles and bricks were used by the early builders which were light enough to float in water, and yet their strength has been sufficient to carry the whole weight of the dome without steel frames. These bricks and tiles were made of a very light clay, and in some instances of lava or pumice stone. Such desirable clay is found in many parts of the world. Bricks and tiles made of superior clay in Spain are nearly as light as the above, and many buildings are made of them in Barcelona, Valencia and other places. It is a common error among many that heavy bricks and tiles are the best because of their strength and endurance. Light bricks and tiles are today made by specialists which have a crushing strength of 2,200 pounds, and they are so light that they will float on water. The condition of the clay, its mixing and firing, are factors which determine the weight of the bricks and tiles, and these are points which architects and builders look for today in their selection of materials for roofs, domes and upper stories.

This may be readily understood when we consider the construction of 20-story skyscrapers in our cities. The main columns and girders of steel must be designed to carry certain loads for each floor.

These beams and girders must be fireproofed with light hollow porous terra cotta. The floors and ceilings must be protected by some similar method. The front of the buildings must have some fancy, ornamental facing, either of stone, terra cotta, light bricks, or stamped metal. Other things being equal, the lighter the material the more satisfactory it is. If the load of each floor can be reduced 10 to 20 per cent., the steel framework may be cut down in size and weight so much. Now the cost of an inch in girth of steel columns and girders throughout a 20-story building represents an enormous amount. The saving of that much would decide contractors and architects to adopt a material for common use. One of the great reasons why terra cotta ornaments and fireproof coatings of skyscrapers are coming so much in vogue today is that, foot for foot, they represent a saving in weight of nearly 50 per cent. over stone or metal. Terra cotta for facing fireproof buildings is thus likely to become just as important as the protection of the steel beams and girders with hollow porous terra cotta blocks.

Fireproof clay tiles, laid flat and on edge in good cement, are being used now in some of our best buildings for floor and steel construction, but their continued use must depend largely upon their weight and fireproof qualities added to their crushing strength. The modern domic ceiling, which admits the construction of a large room on the top floor, with light admitted through a skylight, is best built of hard, flat tiles. These tiles are made with a special regard to their crushing strength, their fireproof quality and their weight. They save nearly 20 per cent., then, in weight over the ordinary domic roof built of metal and fireproofed in the ordinary way. These tile roofs and domes permit a hollow space between the walls, and this increases the fireproof character of the place and also emphasizes the question of weight.

From all of this it will be inferred that builders and architects are inclined to make a wider use of clay products in the modern buildings than ever before. They are satisfied that burnt clay building materials are the most serviceable, but the manufacturers must provide them with the suitable blocks, tiles and bricks. It is within the province of the manufacturers to increase the use of their products by anticipating the building needs of the day. The growth of the industries in special fields will thus increase and develop new lines of work that are today neglected.

THE DRAIN TILE MANUFACTURER A BENEFACTOR.

Clayworking in ancient times was a degraded calling. Now it is classed among the higher arts. From the claybank to the pit, through the factory and kiln to the artist's studio, where, under the delicate touch of pencil and brush, it is prepared for the seggar time, and again, until it is fit to adorn the palace royal. While this is true of pottery, it is also true that those engaged in the manufacture of drain tile are counted benefactors and will be held in higher esteem as the years go by. Beside farming, few, if any, callings have done so much to make it possible and desirable to improve soil conditions, to the extent that crop productions may thus be increased fully 25 per cent, and in addition, so improve the general sanitary conditions so remarkably. In fact, we owe quite a large per cent of our present prosperity to the benefits resulting from farm drainage.

Throughout the great "Corn Belt" tile drainage is the chief cornerstone, the greatest factor in the growing of maximum crops of corn and other farm crops. Again and again lands are underdrained and at once double their production. Lands well worn, that did not yield a sufficient return to pay fully for their cultivation, have been underdrained and at once yield maximum crops, and there are millions of acres waiting the march of tile drainage to yield to the intelligent husbandman a bountiful harvest. At the head of this procession stands those captains of industry—tile manufacturers.

The best results in farm drainage are obtained from the best work; if well done it is a permanent and most satisfactory improvement of soil conditions.

LAND DRAINAGE

BY J. J. W. BILLINGSLEY

THE VALUE OF TILE DRAINAGE.

FARM HANDS usually do not take kindly to digging ditches. This, however, may be overcome in a measure by farmers who are able and willing to say. "Come boys!" when the heavy or disagreeable work has to be done. The most successful tile ditchers are men whose enthusiasm bring the outgrowth of intelligence, the knowing enthusiasm for this work has induced them to take hold themselves. The enthusiasm being the outgrowth of intelligence, the knowing why and how the work ought to be done. If one does not know any good reason why he should tile-drain his land, except to get rid of the surface water, which can be run off in an open ditch, he is not likely to do much, and the little he does will, most likely, be poorly done, and, consequently, not as efficient as it might have been if well done. There are more reasons now for drainage (tile drainage) than ever before. Each added year of cultivation and crop-growing makes the soil more compact and the surface washing of the land is wasting the fertility. Our lands, not tile-drained, break up hard and cloddy—it requires much more labor to make the soil ready for planting. The yields are becoming lighter, excepting very favorable seasons. The mass of farmers cannot expect to maintain soil fertility and continue the prevailing methods of cultivating heavy clay soils without underdrainage. It is high time to press the work of thorough drainage; drain tile are being manufactured on a large scale and may be had at reasonable prices, and money is plenty. It was said, a few years ago, that if money could be had at 6 per cent interest, underdraining could be easily made to pay much more than that rate. At present prices of farm products and with other advantages, thorough underdrainage can be made to pay in many instances as much as 25 per cent on the investment—even more. An interest rate of 15 or 20 per cent ought to satisfy the greed of gain. It is no uncommon thing for those who study their work carefully and do it well, to realize 30 or 40 per cent in the tile draining of their lands. Drain tile, well laid, pays a good deal better than legal interest.

W. J. Fowler says: "A well-laid underdrain becomes more valuable for several years after it is laid. It takes one or two winters freezing to reopen the waterways that conduct the water to the tiles. Each year for years a deep drain will make dry a wider strip on either side of the drain. As for performance, I have drains laid thirty-three years ago, doing good service and apparently good for a hundred years' service, and maybe more. The secret in making underdraining as a permanent improvement is in securing a uniform fall when laying the tile and maintaining a good outlet.

It is claimed that tile will do as well, pay as well, on high ground as on low ground. A man remarked, when he heard the above statement, that "tile draining was like drinking whisky—when a man started in he never knew when to stop."

M. C. Meigs, in his "Voice of the Tile," says for the tile:

> "My habits are good—I require no food—
> (My joints are all made without mortar);
> And I always abstain, when deep in the drain,
> From everything stronger than—water."

ECONOMY OF CLOSING UP OPEN DITCHES.

1. We save space and save much good ground. A rod wide and forty rods long is a quarter of an acre, and that amount of land will be saved in closing a ditch.

2. The open ditches are inconvenient, involving a considerable amount of turning in cultivating the land, which is an additional expense.

3. Animals are liable to get into the ditch and perish. Open ditches are traps for stock.

4. Open ditches are troublesome on account of the weeds that will grow along the ditches—enough to seed the farm.

5. Open ditches increase the damaging effect of our floods, while underdrains retard for a time the flow of the water.

6. With open ditches the water flows directly into the streams. With underdrains the water goes down into the earth, meeting with more or less resistance in making its way to the tile, which serves to hold back the flood water.

7. Water, in flowing off through open ditches, carries the fine soil particles and much of the fertility into the streams and away, never to return, which would be saved by covered drains. The surface-washing of our cultivated lands is doing more to hasten the loss of fertility than does the crops we grow. Surely it is to the interest of every farmer having open ditches on the farm, that could be put underground into large tile, to do it without delay.

BURNING TILE.

Go slow until you have learned the clay. Raise the fire gradually until the required heat has been obtained. If the tile have been well set you will experience no difficulty, probably, but if the kiln is loose it is difficult to make a satisfactory burn. We have seen almost total failures, all for want of right setting. Some clays require that the heat be held several hours, when it is up to the needed temperature to make the best burns, and other clays do not require it. The heat should be kept equal at all points to make the ware uniform. All clays cannot be set the same way to get best results. No two kilns will likely come in rotation requiring the same degree of heat, the same management. The change of the weather will often necessitate a change in the method of burning.—R. W. Addcock.

RECLAIMING VALUABLE LAND BY UNDERDRAINING.

An experiment in deep draining for the removal of alkali from otherwise fertile land in Fresno County, which has just been completed by W. W. Mackie, of the United States Bureau of Soils, is of immense interest to drain tile manufacturers. After a year's experiment the plan of recovering the vast stretches of once fertile land in the San Joaquin Valley is pronounced a complete success. The system of deep drainage, which has proved a success, requires the laying of tile throughout the land at a depth of approximately eight and one-half feet. According to Mr. Mackie, the proper draining of the land will require the laying of eight-inch mains at least every quarter of a mile throughout the district. Into these mains laterals of four or six-inch tile run at a distance of every 200 feet. No estimate of the exact area of the land which has gone out of cultivation in the San Joaquin Valley has been made, but it is beyond question that it includes many square miles, and as the difference between the former value of the land and the present value is from $$200 to $300 per acre, it is probable that the owners of the land will not be slow to make use of the knowledge gained by means of this experiment. Manufacturers of drain tile may expect an immense call from Fresno and vicinity within the next few years.

Written for The Clay-Worker.

BRICKMAKING IN WESTERN NEW YORK.

Brick Paved Jamestown—Splendid Streets After Years of Use—No Expense for Repairs.

A MAGNIFICENT two-mile stretch of fine brick paving, winding in and out and over the hills, a model roadway, apparently as durable and lasting as the hills themselves, greets the eye of the traveler as he comes into Jamestown, N. Y., on the trolley from Falconer. This pavement is as perfect in its construction today as when laid over eight years ago, and it receives fairly heavy traffic. The brick of this wide thoroughfare are set well apart with a tar pitch filler and are smooth and even, making it a pavement easily cleaned and drained.

Two Views of East Second Street, Jamestown—A Two-Mile Stretch Paved in 1898 and With No Repairs is Now in Excellent Condition.

Cherry Street, Paved in 1899.

West Third Street, Laid 1894.

Indeed, this is not the only brick street worthy of note in Jamestown, for that city is a veritable network of beautiful brick pavements. Brick streets are seen in all directions, running over the hills, which are numerous in this locality, and sometimes taking a grade of nearly 10 per cent. The money expended for repairs for the pavements in this beautiful city would hardly keep a pauper alive. The city has never had any bad experiences with its paved streets, for not a yard of asphalt pavement is to be seen in this great furniture manufacturing center. Of the eighty-two miles of streets a little over eleven miles are paved, and with the exception of a fraction of a mile of creosote block and less than a tenth of a mile of stone, the paved streets are all of brick, made by the Jamestown Shale Paving Brick Company, which is operated within the city limits just off of East Second street.

Every paving brick and block used by the city of Jamestown was made by this firm and so thoroughly satisfactory is their product that City Engineer Jones says he don't believe he could ever find a more suitable material for his work.

During the present year 3,500 square yards of brick are to be laid. The oldest streets in Jamestown are brick and they have been down from ten to twelve years, and are in excellent condition.

The records of the City Engineer's office show the history of the paving brick in Jamestown, given in miles, to be as follows:

	Brick.	Block.	Stone.	Asphalt.
1894	.698	....	....	....
1895	1.112	....	.078	....
1897	1.231	....	....	....
1898	2.423	....	....	....
1899	1.342	....	....	....
1901	.055	....	....	....
1902	.788	....	....	....
1903	.713	.075	....	....
1905	.508	....	....	....

Five miles of this brick paving gets heavy traffic and hasn't worn one-eighth of an inch. So remarkably hard are the brick that the kiln marks can still be seen on some of them. The brick streets have the heaviest traffic, while the block the lightest. The sandstone has had very heavy traffic and shows up well. Engineer Jones's estimate of the durability of brick streets is in accord with the views of other prominent city engineers. He says a good brick street properly laid will stand thirty years of the heaviest traffic, while it will last fifty years under light traffic.

He recommends the round edge block, with tar filler, for heavy traffic, it being best for horses' foothold. The brick are laid according to N. B. M. A. specifications, costing from $1.50 to $1.74 a square yard, while the wooden block averages $2.30 per square yard, and the stone $2.50. The city requires a five-year guarantee for the materials.

Factory of the Jamestown Shale Paving Brick Company.

This plant has been manufacturing paving brick since the company's incorporation in 1894 and has built up a reputation for a fine grade of ware, which cannot be excelled by any other company in the United States. The brick are made of the hardest kind of shale, requiring an extra strong dry pan to crush it. It consists of sandstone and bluestone impregnated with iron, which makes the material most difficult to mine and work, but when fired makes an excellent ware. It takes an unusual amount of fuel to burn it, however.

They mix with the stony material a top clayey soil, both being taken from the field to the plant in hugh wooden cars by means of a wire cable.

The three dry pans in use are of an unusual crushing strength; the mullers are skewed away from the yoke and about four inches to the left of the center shaft, giving the stony shale a slipping of about four feet and thus adding materially to the grinding ability of the pan. The pan can grind up to a fine powder, in less than a minute, a wheelbarrowful of the toughest vitrified brick ever made. This has been demonstrated at this plant in recent years and has proven a great convenience and necessity, for the material is as tough as flint.

From the dry pan the material is elevated to the ordinary shaking screens by means of cup elevators. The screens have a metallic block at the top to spread the ground material, and a lifting arrangement at the bottom, which does away with the need of having a boy to watch the screens. A large Bonnot pug mill, brick machine and an automatic cutting table are employed. The repressing is done on two Bonnot represses of two-mold construction.

An end cut table is used on account of the constant need of changing the wires for different size brick and block. To get rid of the rough edge left by the wire and to obtain a uniformity in the brick and block, a novel spatter is used. It simply consists of a plank rounded at the farther end, loosely fastened to an iron rod stretched across the top of the column of cut clay. The other end is lifted and dropped automatically by means of a strap and crank arrangement. It is an odd arrangement, but works admirably.

The plant works seventy-five to eighty men, mostly thrifty Italians. Foreign labor has been employed at the plant for

General View of the Plant of the Jamestown Shale Paving Brick Company.

The Shale Bank.

A Section of the Kilns.

a number of years. In 1902 most of the laborers were Swedes, but the Italians have proved the better and cheaper workmen.

The plant has a daily output of about 35,000, consisting mostly of paving block and brick, only a small portion of the output being building brick. The dryer is of 16-tunnel construction, thirteen cars being placed on each track, each car holding 550 green brick, thus having a capacity of nearly 115,000 brick. Exhaust steam is used by day and live steam at night.

Five down-draft kilns of 120,000 capacity are in use. The brick are set thirty-six courses high, the bottom six courses being common building brick. The furnaces to the kilns are built out from the kiln proper, so that they are easily repaired. Every brick in the kiln and dryer, even the fire brick, were made at the plant.

The plant runs the whole year around, shutting down for repairs only. During the last year the plant was run continuously, with the exception of two weeks taken for the repairing of the kilns.

The company owns over fifteen acres of shale, which has a depth of 30 feet. The plant is located on the river bank and a railroad runs past its very doors. They are extremely busy at the present time filling an order for a million and a half pavers, which was received during the writer's visit.

The Extra Heavy Dry Pans.

Mr. J. B. Fisher is president of this company, Mr. John Mahoney, secretary and treasurer; Mr. R. C. Cobbe, general manager, and Mr. George C. Little, who has been identified with the brick business for nearly twenty-four years, is the superintendent.

J. E. R.

PRIZE COMPETITION FOR A BUILDING IN GERMANY

Open for Architects and Designers of the World.

The German Association of Face Brick and Terra Cotta Manufacturers has made a prize competition for the best designs for a residence, to be erected in Hildesheim in Germany. In view of the fact that face bricks and terra cotta have made such great advance in recent years in architectural designs, this association has made the competition open for architects and designers all over the world. This association is very anxious that the American, and especially the German-American architects should take part in this competition, and The Clay-Worker will be glad to forward plans, specifications and terms to all who are interested.

The competition is open until December 30, 1906, and the prizes are: First prize, 800 marks; second prize, 500 marks, and third prize, 300 marks. Mr. K. Dummler, of Berlin, N. Kesselstrasse No. 7, is secretary of the association.

GOOD LOCATION FOR BRICK, TILE AND POTTERY PLANTS.

Among the new advertisements in this issue will be noted that of the Industrial Department of the Rock Island-Frisco Lines.

The above department has jurisdiction over the lines of the Chicago, Rock Island & Pacific R. R., the St. Louis & San Francisco R. R. and the Chicago & Eastern Illinois R. R., and reaches seventeen States and Territories. It necessarily follows, therefore, because of the vast extent of territory reached, and with such varying conditions, that desirable manufacturing locations for all classes of industry can be found along their rails.

The Jamestown Shale Paving Brick Co.'s Kiln Furnaces.

Setting Brick in Kiln.

The province of the Industrial Department is to advise the manufacturer regarding the best all-round industrial locations for his particular industry from the standpoint of accessibility to his raw materials, fuel supply, markets for finished product, favorable labor conditions and inducements procurable from local commercial organizations. The Rock Island-Frisco Industrial Department offers its aid and cooperation to all manufacturers and business men seeking new locations, and can furnish particulars regarding the above-mentioned manufacturing requirements at cities along its rails.

In Philadelphia Brick Yards.

JOHN SULLIVAN'S YARD, LANSDOWNE, PA.

THIS YARD TURNS out its 7,000,000 bricks per year, and most of them help to build up West Philadelphia. Just at present they have a contract to supply two hundred and twenty two-story houses for Fred Michaelson, which requires five million bricks. Another building using Sullivan's bricks is a woollen mill at Darby. Besides there are municipal contracts, conduits for the Bell Telephone Company. For the past twenty-five years this yard has had a contract for supplying brick for sewers. Business is good, but not quite up to that of last year, due entirely to the fact of irregular labor.

The vital question with Mr. Sullivan, as with so many Philadelphia brick manufacturers, is the labor question.

The negro works when he gets hungry and absolutely needs the money—when his wife becomes too ill or lazy to take in washing. Labor has the advantage, for he so well knows that after his return from a few days' siesta on his own account, his employer is bound to take him back or put up with something worse. These are fine times for the laboring man, but he little realizes or appreciates it. He spends his money—if it be five dollars or twenty dollars—and when hard times return, as they naturally are bound to do in the revolution of the wheel of fortune, he will be no better in finances for all this boom in the brick business.

The Holmes Brick Works, Holmes, Pa.,

were obliged to shut down last September on account of this all-important labor question and have not yet started up again. Mr. M. J. Smith, sole owner of the yard, has been a keen sufferer from rheumatism, and after some time spent in the hospital is improved, but not cured of his trouble.

On the 7th of this month Mr. Smith started his hand-yard. Hand-made stretchers bring from $12.00 to $13.00, and they can keep busy at this for a time. This winter the plant will have a dryer and will work throughout the entire winter, and it is to be hoped without any drawbacks whatever.

Mr. Smith uses the Martin soft mud machine, turning out 2,000,000 or more brick per year.. The three kilns have a capacity of 150,000 brick each, stacked thirty-five high, set for six days; 25,000 bricks daily just fills the kiln.

This brickyard is one of the most picturesque imaginable. There is plenty of ground and a beautiful miniature lake as a setoff. One might linger for the pure love of the beautiful. Mr. Smith's house, convenient to the trolley line, is situated in view of the lake and brickyard beyond, and after one last sweeping glance, including all, we thanked Mr. Smith for information and boarded the trolley.

The next yard visited was that of Mr. Ackerman at Morton, Pa. He genially responded to all questions plied by THE CLAY-WORKER correspondent.

His monarch machine turns out anywhere from 800,000 to 1,600,000 brick yearly. The two kilns have a capacity of 180,000 each, stacking them thirty-six high. This yard supplies bricks for Media, Darby and the B. C. road as far as Oxford. At present they are supplying bricks for eight houses at Media, which means about 325,000 bricks. They have another contract for 60,000 bricks for the Carnegie Library at Swarthmore College, and many smaller ones in the surrounding district.

This is Mr. Ackerman's third yard. He moved from across the road a bit to his present place three years ago. He had occupied that yard for eight years, and is now hustling on a business system of his own. He has practically no labor troubles. He requires each workman to make a certain number of bricks per day, and sees that he does it, too. By this method the workman keeps hard at it while he works, but leaves early in the afternoon, which fact is a gratification to him, as he compares his hours with those of workmen from other yards. Even a child will not mind working a trifle more streuously for the sake of leaving early.

The Aldan Brick Company.

Mr. Ream, of the above company, received me with the genial courtesy that bespeaks his nature. The last time THE CLAY-WORKER representative called, this yard was having its own troubles. New machinery was being placed and tested, but now all is well and things progressing generally. Their Chambers machine turns out 6,000,000 bricks yearly. Their three kilns, set thirty-eight high, have a capacity of 20,000 each, and their contracts call for many bricks for the West Philadelphia boom.

Mr. Ream is confined very closely to the yard, keeping workmen in order and work moving. He understands human nature and the brick business, all of which is manifest to the observer.

H. C. Carroll & Sons.

The above firm, Fifty-eighth and Girard avenues, is contemplating a change of location. This move will excite general interest among the brick manufacturers, as the Carrolls have occupied their present site for thirty-five years, taking possession in the year of 1871. The ground at that time was a wilderness of forty-six acres. Forty acres of this has been sold, at various times, until now but six remain, and all of it is worked out, as far as brickmaking is concerned. This is not surprising, in the face of the number of years and the number of bricks. Starting with an output of five million bricks per year, they have increased to twenty-five million yearly. A slight calculation shows us somewhat the meaning of labor, money and bricks which have helped to build up the city.

The new plant will be erected at Sixty-seventh and Elmwood avenue. In other words, Southwest Philadelphia. The ground covers an area of one hundred and nine acres, and has been known as the "Rosedale farm," owned by Binst Brothers, and used by them in the culture of rare flowers, and contains the most complete shrubbery and nursery of any in all Philadelphia. Think of slaughtering all that beauty, all of those beautiful trees, rare shrubbery, and luxuriant growth of flowers and replacing them with rows of ordinary brick sheds, brick machinery, kilns and flying dust and stacks of brick. From glorious, refreshing beauties of nature to the commonplace manufacturing of brick.

The Carrolls, themselves, with their great warm appreciative hearts, regret the contemplation of the cruel idea, but alas! Even the most poetical and aesthetical sympathies must subside in the face of public demand, and the Carroll Brothers have about one thousand houses in the course of construction at present, in West and Southwest Philadelphia. The building boom seems drifting in that direction, and labor must necessarily be pushing at the heels of progress, whilst invention pulls at the forelock. A large plant and the latest improvements will be erected on the new site, and there is sufficient material there to last more than fifty years. The Carrolls are fully occupied with their present contracts, bricks all sold out, and they, as always, good-natured, broad, generous, and teeming with general good will toward all.

M. E. LOCKINGTON.

Composition of Fire Bricks.—A fire brick which will stand high heat and quick temperature changes should have a body in which the grog particles are coarse and the plastic clay for bonding purposes should be small. For high temperature the proper selection of a fire clay is essential. To manufacture a brick which will stand above mentioned quality, we would advise the use of a high grade fire clay in small percentage with a high per cent. of coarse grained grog of the same fire clay material.—Tonind. Z. No. 54, 1906.

* * *

The Burning of Fireclay Products.—The amount of coal used in burning fireclay products in Germany figures about 223 pounds of coal to every 1,000 pounds of clayware. The temperature at which this was burnt is about cone 13. The average use of coal in a factory in Rhineland was 20 per cent. by a temperature of cone 11, while another factory used 21.5 per cent. of coal. If the coal used does not give the necessary heat, it is advisable to finish up for the last day with a high grade coal in order to finish the kiln at the proper temperature.—Tonind. Z. No. 77, 1906.

* * *

Sunday Law in France.—Last month a new Sunday law went into effect in France. This law prescribes that all employes and workingmen shall be given every week at least a day of rest of twenty-four consecutive hours. The Sunday should be chosen whenever it is possible, and any other day if the same is given to all employes at the same time. There are a few exceptions to this law, and the clayworking industries are among them, as being an industry where considerable loss should occur if the burning could not be carried on on Sundays. Proper fines with imprisonment are given to everybody who disregards the wording of the new law.—Moniteur Ceramique, No. 15, 1906.

* * *

One Chimney for Two Purposes.—The problem, if one chimney would answer for two purposes, has often been mentioned. In this case it was a question if a chimney could serve at the same time for a boiler and also for a continuous kiln. In the different replies in regard to this question, we find that two parties do not favor this scheme at all, four other people are in favor of it, and three others are in favor of the common use of the stack for both purposes, but are also in favor of a partition wall in the stack up to a height of about 16 feet. The results of these questions was that the boiler was duly connected with the continuous kiln stack without any partition wall, and the results were very gratifying. The draft in both the kiln and the boiler was all right and no bad results have been observed so far from this experiment.—Tonind. Z. No. 76, 1906.

* * *

Brick Buildings of Ancient Times.—Architect Schmitt, of Munich, has recently published a very interesting article in regard to buildings which were erected of brick in ancient times. At Trier or Mosel, there is in use today a church building which was erected in A. D. 309, at the time of Emperor Constantine. These bricks have stood the weather for more than sixteen centuries, and while they are not hard burnt, it goes to show that brick is much better than any other materials for building purposes. In Calcar, near Cologne, we find what is considered today one of the finest brick buildings in that section, which was built in 1148, and is considered the oldest brick building in Northern Germany. There are mentioned quite a few other buildings which were erected in the fifteenth century, and which are good buildings today.—Deut. Topf. & Z. Z. No. 53.

* * *

Lead Question in Germany.—At the annual convention of the German Society of Ceramic Manufacturers, which was recently held in Berlin, the lead question took a very prominent part. Different members of the society reported on the experiments which they had conducted in regard to this matter, and it was shown by the recent researches of Dr. Pukall that lead poisoning from pottery containing lead in its glaze was never established, and the danger from that source was very small. It was also shown that lead was one of the most essential fluxes for the production of good glazes. After a very animated debate it was decided to work hand in hand with the government in order to convince the officials that some changes should be made in the lead law as it stands today. That the government did push its case hard was shown by the case of the city of Velten, where thirty-four manufacturers were arrested, and found guilty of using lead in their pottery glazes.—Keram. Rundschau, No. 25, 1906.

* * *

The Sticking of Bricks and Other Clay Products to Elevators.—It has been often found that by the use of elevators that brick and pipe often stick to the boards or belt. In order to overcome this trouble, there is usually sprinkling of sand over the surface to prevent adhering. The following two sketches are mechanical means and are operated with success in several German factories. In Fig. 1, A is the shaft of the elevator and on the same is attached a screen with fine mesh which contains sand. In revolving the sand falls on the elevator board below, and the same is sanded for operations. In Fig. 2 the same principle is adhered to, however, with this advantage, that the flow of the sand is limited, and the sanding is done more systematically.—Tonind. Z. No. 78, 1906.

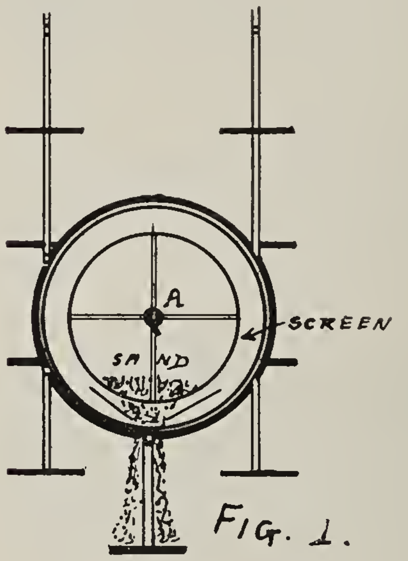


FIG. 1.

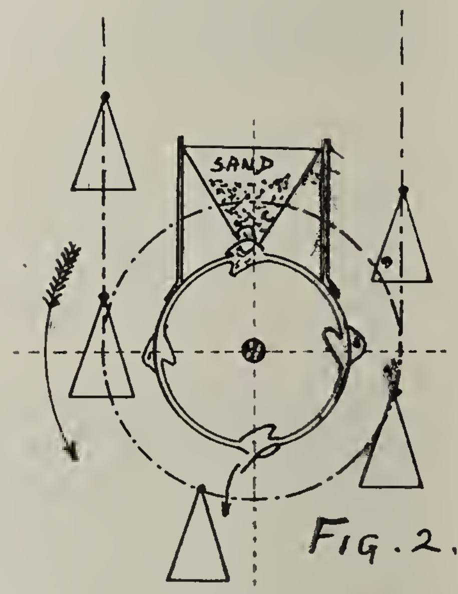


FIG. 2.

* * *

Fire Resisting Qualities of Kiln Linings.—In reply to a question, if a kiln which was formerly used for the burning of paving brick, could now be used for the purpose of burning fire brick, we find the following answer. The paving brick were burnt by cone 02, and the fire brick will require a heat of cone 10. It is now only a question if the lining and the flues of the kiln will stand this increased heat which will be necessary to burn the fire brick. If the kiln is properly constructed it should all be fire brick lined, but quite often, in order to save in the erection cost, an inferior quality of fire brick and sometimes also hard burnt red or buff brick is used. Such a lining would not stand the heat of a cone 10 very long, and therefore the lining should first be tested as to the quality of the brick it was built from in order to be sure that it was adopted for high heat burning. In order to save the expense of entirely relining a kiln, it has been found quite economical to chisel the inside slack on the brick of the lining off, and then apply a ¼ to ½ inch coating of fire clay mortar, which was mixed with water containing some salt. This coating can be brushed over several times, and it will be found that in most cases the lining will last for quite a long while.—Tonind. Z. No. 80, 1906.

BRICK AND TILE MAKING IN THE TROPICS.

By C. C. Fuller.

(Courtesy of Scientific American.)

MANY READERS of the Scientific American are familiar with the primitive "adobe," or sun-dried bricks, and the process of making them. Such bricks are extensively used today in many countries where the climate is dry and heavy rains are almost unknown. In the tropics, however, the annual rainy season makes their use impracticable except in very small buildings, where they can be entirely protected by wide verandas.

The brickmaker in the out-of-the-way districts, under the conditions in Rhodesia and most tropical countries, is confronted by a serious problem, into which a number of elements enter, such as the enormous cost of installing modern machinery, the lack of skilled labor, occasional torrents of rain even in the dry season, and, in many places, the poor materials available.

Throughout South Africa, outside of the modern cities, a kind of handmade "slop" brick has been used for many years by both Dutch and English colonists, and many fairly substantial buildings are built of them. But with the introduction of modern machinery and methods into the cities, there has grown a demand for better bricks in the back-country districts, especially from those accustomed to the advanced methods in the United States, and here and there small machines have been installed.

The Pug Mill Stood Between the Pits.

It is only eleven years since the American Gazaland Mission was established at Mount Silinda in the mountains of southern Rhodesia, about 200 miles inland from Beira on the east coast and 150 miles south of Umtali on the Beira and Mashonaland railway, which connects at Salisbury with the Cape to Cairo railway. The isolated position, and consequent great expense of transporting supplies, made it necessary to use materials on the ground in the construction of the mission buildings, and common "slop" brick were used in all the older ones. Necessity, the mother of invention, led to the manufacture of flat shingle tiles, made entirely by hand, which are fairly satisfactory for roofing purposes, but very easily broken in comparison with the pressed tiles used in Europe and America.

Three years ago the writer was sent out by the American Board of Commissioners for Foreign Missions to establish here an industrial department, something after the pattern of the well-known institution at Lovedale, Cape Colony, or our famous American school at Tuskegee, Ala. Early in 1904 preparations were begun for making bricks and tiles for the first workshop, and as the building was larger than any of the earlier ones, and must carry some heavy machinery, it was necessary to make a better brick than previously had been used. A small pug mill of English manufacture had been for some time the property of the mission, and among the industrial equipment was a hand brick repress made in Cleveland, Ohio.

An Immense Shed of Thatched Grass Protected the Bricks.

We are fortunate in having fine clay for both brick and tiles, but the deposits are some distance from the mission station, which necessitates hauling either clay or the finished product about two miles. Both methods had been used, but we decided to make the brick at the pit, and so dug a ditch more than three thousand feet long through the dense forest and jungle, to bring water from the nearby stream to the molding tables.

In April and May, before the close of the rains, we cleared the rank growth of grass, weeds and vines from the field, and built an immense shed of poles thatched with grass, to protect the bricks after they were dry enough to put into the kiln. Test holes were sunk, the little pug mill set up, and everything made ready for beginning work at the end of the rains. Early in June active operations were begun. Two pits were opened, using the clay from them alternately, as in this way it could be dug up during the day and the pit filled with water from the ditch; then, by the following day, the clay was well soaked for pugging.

The pug mill stood between the pits, and the clay was carried to it in ordinary hods, the first ever seen in this part of Africa. Under usual conditions a horse or mule would operate the mill, but here neither was available, as this climate generally proves fatal to either within a few months. Donkeys were to be had, but we found them too slow, so used two to four "boys" instead, changing them frequently and experiencing little trouble with them. Of course, they grumbled at our making *izimbongolo* (donkeys) of them, but really they had about the easiest work on the field.

The difference between American and English machines is well illustrated by this pug mill, which simply pugs the clay and discharges it unmolded, while the corresponding American machine would force it out in form to be cut into bricks by a wire or knife.

After coming from the pug mill the clay was tramped by the bare feet of a boy or two, and then taken to the molding tables. The usual way is to temper the clay by turning a lot of cattle into the pit, and driving them around until it is well mixed. At the tables the molders press the clay by hand into the wooden forms, two or three bricks to the form, using water liberally. Boys carry the forms to the field, which is dug up into long parallel rows, smoothed off very carefully on top, and just wide enough for the bricks in one form. It is quite a trick to shake the soft clay free from the form without spoiling the bricks. In fact, they are usually rough and irregular. Here is the great difficulty in the South African "slop" brick, and just here our little repress made a vast improvement possible. In the usual practice the wet bricks are covered with grass and allowed to dry slowly, until beyond danger of cracking in the sun. Then they are dried as fast as possible, and when a few thousand are ready they are put into a kiln and burned.

After They Were Dried the Bricks Were Placed in the Kiln.

Scene at the Molding Tables.

We allowed them to dry under cover for five or six days, then we repressed them and stacked them loosely in piles to finish drying. Two molders averaged nearly 4,000 brick daily, and by putting four of the best men on the repress, we were able to take care of them. One man with wheelbarrows wheeled the bricks from the field to the machine, and two carried them away to dry, making seven men engaged in repressing. The record run for both molding and repressing was approximately 5,000 in a day of little more than nine hours.

This is commonly supposed to be a land of cheap labor, and the cost of manufacturing may be of interest. The molders were paid $10 per month, the best men on the repress $6.25, ordinary laborers $4.25, and boys $1 to $3 per month without food. About thirty men were employed, and the bricks cost approximately $4.00 per thousand when burned, not taking into consideration the loss in burning. Repressing costs nearly 30 cents per thousand, and easily doubles the value. Our brick are the wonder of all the district, and others say they will try to duplicate them.

The manufacture of tiles is very similar, but far more difficult and not so satisfactory. The clay was put through the mill three times, well tramped by boys, then worked thoroughly by hand, and molded into thin cakes 1 inch by 3½ inches by 12 inches. These must be kept very carefully covered, and repressed at just the right stage, in order to make perfect tiles. It required two extra heavy men on the lever of the repress to secure sufficient pressure, and 800 per day was about the limit. After repressing, the tiles are again covered with grass till they are quite dry. The cost in the kiln was about $10 per 1,000, but later losses brought the final cost up to nearly $20 per 1,000, and even at that price they were only about half the cost of iron roofing delivered here.

About 90,000 bricks and 16,000 tiles went into the kiln, which was much larger than any before attempted in this district, and for this reason was not sufficiently burned. The consequent loss of bricks was small, but the loss of tiles was about 45 per cent., notwithstanding 6,000 were successfully reburned in the face of the assertion by old brickmakers that it could not be done.

The breakdowns and repairs were what might be expected in any country 150 miles from a repair shop, and need not be recounted here. It is hoped that tiles may be made much more successfully this season, as we have made some improvements in the dies. Possibly other readers of the Scientific American working under similar conditions may find in these experiences some suggestions of value.

The Traction Engine in the Jungle.

THE WEBB WIRE WORKS.

The Webb Wire Works of New Brunswick, N. J., manufacturers of music and needle wires, are making a specialty of brick and tile cutting wire, known as the Red Label brand. As is well known, the requirements of wire for brick cutting are very severe. To meet these, the material has been carefully selected from the best imported stocks, made to an analysis submitted by the Webb Wire Works. This select steel has then been put through a special process of manufacture which gives the wire the desired qualities of hardness, combined with great strength and toughness. The Webb Wire Works has purchased all its machinery and furnaces to manufacture only these particular grades of wire, and in this respect stands alone in the wire industry. They believe the close supervision, such as can be given only in a small plant, will result in the manufacture of wires superior to any other made in this country or in Europe. Mr. E. H. Webb, president and manager, gained his experience at the Trenton Iron Company, where he rose to the position as superintendent of the wire mills under the Copper, Hewitt & Co.'s management, and later became general superintendent when the plant was bought by the U. S. Steel Corporation.

The directors of the Webb Wire Works are Mr. E. H. Webb, above named, president of the company; Mr. S. D. Webb, who is president of China and Japan Trading Company (Limited), of New York, and Mr. Herbert M. Lloyd, treasurer and managing director of the American Paper Goods Company, of New York City and Kensington, Conn.

CONTEMPLATED MERGER OF FIRE BRICK MANUFACTURERS.

THE MOST important topic in the Western Pennsylvania brick world for the past month has been the contemplated merger of the independent fire brick manufacturers, 63 in number, operating about 100 plants which have a daily capacity of about 2,000,000 brick. The capital stock of the new company will be $25,000,000. The meeting of the owners was held in Pittsburg at the office of A. M. Neeper, on September 5, but an agreement could not be reached and final action has been deferred until a later meeting can be held. Options had been taken on all of the plants, these expiring on October 1, but the time has been extended until November 1. It developed at this meeting that the option prices asked for the plants were too high, and more than would warrant consolidation under the proposed capitalization, and a unanimous agreement was reached to readjust the option prices upon a basis agreeable to consolidation with a capital of $25,000,000. The meeting was then adjourned with the understanding that another would be held within the next month, when it is believed that the consolidation will be effected.

The fire brick manufacturers of the country have never consolidated, the only corporation being the Harbison-Walker Refractories Company, which is capitalized at $28,000,000, and has a bond issue of $3,000. The combined output of the company's works is about 1,100,000 brick per day. If the new combination is pushed through, it will have a great advantage over the Harbison-Walker Company in the way of freight rates, as it will own and control plants in every section of the country. The selling territory will then be divided into districts, and shipments made from the plants nearest the destination of the material. James B. Hammond of the Reese-Hammond Fire Brick Company has been an active figure in the efforts to consolidate the plants. His company operates seven plants.

The following fire brick companies were personally represented at the meeting: Reese-Hammond, Joseph Soisson, T. Ashland, W. H. Wynn & Co., Sandy Ridge, Renova, Climax, Elk, Gardner Bros., Dunbar, Savage, Garfield, West Branch, Davis, Ohio, Welch, Scioto, Dover, Sharon, Chicago Retort, Lincoln, Layton, Burns, Stuart, Gloninger & Maxwell, Fayette, National, Miners, Federal Refractories Company, Lock Haven, Olive Hill, Sandy Ridge, Stowe-Fuller Company, Eureka, Mountain, Buckeye, Brighton, Barnes, Osceola, Hays Run, Big Savage, Apollo, Gleasonton, Petersburg, Piedmont, Southern, American Magnesite and the Rose & Oak Hill Fire Brick and Coal Company.

"IN PERPETUUM HOMINUM MEMORIAM"

FIRST OF THE FIVE
BOOKS OF
KRUHADHARA'S
REVELATIONS

EVULGATED
IN COLLABORATION BY
E.V. JOHNSON AND
F.W. FITZPATRICK

(CONTINUED FROM AUGUST, 1906, ISSUE.)

"In Perpetuum Hominum Memoriam" may be thought grewsome by the morbid of mind; to the philosophic, the real workers, the normal men and women, true progressionists, bent on helping in all they may to solve the questions of life, the few paragraphs extracted from that volume that I have permitted to be reproduced in the following pages will, I have at last convinced myself, be not so regarded, and brief and disjointed as they are, they will clearly show the trend of development in this country, at least, in the short span of these coming twenty years. To the hopeful, the true of heart, the ones who look ever forward and upward, the motives that impelled me to give this much will be readily appreciated; they will understand my hesitancy in giving the entire matter to the world, and to them do I dedicate this fragmentary work of deep import and most mysterious origin, of which I am but the humble custodian.

* * *

(From the Washington Post, December 3, 1906.)

" . . At different times in the last few years the attention of Congress has been called to the necessity and desirability of improving the City of Washington, the extension of its parks, the more artistic grouping of its public buildings, the elimination of its 'bronze-men-on-horseback' and the construction of some one monument of fitting beauty, the making of the city a truly beautiful Capital worthy of the nation. The movement is fast assuming tangible form. . . . Yesterday's public hearing of suggestions and debate before the Senate Committee on Public Buildings and Grounds marks the beginning of a real activity and concerted movement toward the desired end.

Foremost among the speakers was Franklin W. Smith, the founder and curator of the "Halls of the Ancients." Mr. Smith would attract attention anywhere, but when thoroughly aroused and speaking on his favorite topic, "A Greater Washington," his enthusiasm, added to his patriarchal appearance, makes him a most impressive figure. Though he is nearing the four-score mark, his utterances, his gestures and carriage are full of virility and power.

As part of a regenerated Washington, he has advocated the building of a great national monument here, commemorating our national achievements. He has dreamed about it, preached it and advocated it until the scheme has been woven into and is a part of his very life.

Developing the advantages of municipal art, Mr. Smith said:

" . . . What has municipal art done? It has beautified, it has stimulated, it has commemorated for more than three thousand years. It made Athens the most famous city of antiquity, for her beauty's sake—the beauty of her statues, her pictures, her music, her plays and poems, for which she instituted civic and national trials of skill; for the commemoration of her patriotism, which again took the form of beauty, and builded the memories of Marathon and Salamis into the stones of the Parthenon. It made Rome the most splendid city of her splendid empire, a museum of art for all times, a school room for the students of four centuries. It gave to Ephesus and Halicarnassus and Thebes fame that has endured longer than the cities themselves. It has perpetuated the memory of the wise and the strong, and thereby stimulated millions of men to the thought of great examples, millions more to the reverence of beauty and a higher appreciation of nature as re-echoed in man's handiwork. It has helped men to think. In sum, public and municipal art is a public and municipal educator. Therefore, it is good; therefore, we should have it.

"As an educational factor municipal art can not be overestimated. Monuments teach glory more than can any book. Why should not the American people be taught patriotism in a similar fashion to a far greater extent than at present. Our history abounds in great subjects well adapted to artistic portrayal and what country has given birth to greater men? Nothing would be a more effective agent in making good citizens of our ever growing foreign population than such monuments. Many of them can not read English books, but they can read monuments that appeal to the eye. . . .

" . . . When I contemplate the supremacy of that lofty standard of patriotism which will guide our footsteps in the pathway of national duty and honor, a vision of ineffable splendor bursts upon my imagination. I see this Republic in the vanguard of the world, standing distinctly for humanity, liberty, justice and progress. . . . I see the Greater America wielding, with a just and benevolent hand, her supremacy, holding the sceptre of commercial and financial empire. I see the realization of the dream of patriots and the aspirations of statesmen that our country, through its social, political and commercial influence—with never even a suggestion of physical force—should become the means of diffusing civilization among backward people. . . . I see our Washington the intellectual and educational, as well as political, center of the continent, embodying in her public edifices the noblest intellectual conceptions of American art and architecture. I see her galleries of national history and art, her institutions of law and medicine, her temples of science surpassing in the amplitude of their resources for knowledge any the world holds elsewhere. I see American valor, virtue and accomplishment commemorated in a magnificent monument rising high above all else in our beautiful capital. Such a monument would inspire, would increase patriotism; that virtue, gentlemen, has a tendency to disappear as we become wealthier as a nation. As individual wealth increases we become more luxurious, and luxuriousness begets selfishness, and selfishness destroys patriotism. God forbid that selfishness should ever stifle the better promptings, the patriotism of our people! But that virtue requires stimulation in our young men. Why not make a visit to our capital a feature of every high school graduation? The Jews of old, and even those of more recent times, often visited Jerusalem in prayerful pilgrimage; every true Moslem sees Mecca at least once in his lifetime; every Roman made it a point that, wherever he abided, his sons should see the splendors of the capital city in early youth, that the glory of the nation might be deeply impressed upon their young minds—'All roads led to Rome.' So with the Greeks, who made of Athens a place of obligatory assemblage at certain stated intervals. 'Mere sentimentality of semi-civilized times,' say you? 'Our people need no such spectacular dramatic visitations and parades' and pilgrimages to stir up their patriotism.' But you forget, gentlemen, that as other peoples have been, so are we. We are made the same as other men. To assert the contrary is effrontery, conceited folly; history is constantly repeating itself, our young do need to see monuments, to witness patriotic parades and hear bands of music playing national airs, just as much as did the sons of the Romans, two thousand years ago. Make not that mistake. Think not that we are apart from others, unlike the unusual conglomerate of mortals. Our senses need to be appealed to, our spiritual through our material, corporal ones, or they both grow dull apace. . . . ”

THE ONE INDESTUCTIBLE BUILDING MATERIAL

“The one material that has withstood the ravages of time and the elements, in every climate and under all conditions, is burned clay, brick. In Babylon, in Egypt, in Rome, in South America, in Mexico, everywhere, we find bricks, urns and tablets of burned clay, perfect in shape and condition, however roughly, carelessly or imperfectly made they may have been. The one material that has withstood the intensest fire and frost and every condition of our times and climate, and without showing the slightest indication of disintegration, is well burned clay . . . . ”

(From the Chicago Record-Herald, January 8, 1907.)

. . . . It would seem that this nation, a nation of eighty millions, could well afford to spend even a considerable sum of money to make its capital a superbly grand city. The project of a great national monument there, in commemoration of the country's growth, and built of materials from every State in the Union, and from every Territory and Province is a most laudable enterprise, and merits and has our most cordial support. . . . One thing the Record-Herald would suggest in that connection, however, is that such a monument should by all means be made of imperishable material, and not subject to deterioration, ruin or destruction which will be the doom of all that we have done before.

(From the New York Herald, January 25, 1907.)

. . . If New York, the commercial metropolis of the country, a city after all of but four million people, can afford to spend something like $1,000,000,000 for public and private improvements to the city, for better water, transportation, health and other services, then surely can the nation, a nation of 82,000,000 people, afford to spend the few million dollars required to build a national monument, something really worth while, that has been proposed for Washington City.

(From Modern Construction, January, 1907.)

In the discussion now going on in Congress and in the daily press anent the building of a great National Monument in Washington, much is said of “building it of imperishable materials, granite, stone and marble, drawn from every State of the Union.” All this, of course, emanates from lay writers. We sincerely voice the sentiment and most earnestly advocate that the monument be made “imperishable,” indestructible, but neither the granite, nor the stone, nor the marble now found in any of our States will meet that requirement. Marble and stone, the best we know, spall and disintegrate within a few years, under the chemical action of the commercially acid-laden atmosphere and the stress of our climate, varying from intense heat to severe cold. One hundred, yes, fifty years, is about the limit of perfect duration of marble or stone here. Granite does but little better; moisture gets into its tiny fissures and veins and our severe frosts do the rest. In Egypt, in Babylon, in Rome and Greece there are structures a thousand years old, or more, yet in a fair state of preservation, and there are ruins many thousands of years old that nevertheless afford admirable records of the time of their inception and of the peoples that built them. It is lamentable, certainly far from flattering, when we stop to think that nothing we have so far built can possibly exist, as we have built it, for another five hundred years, and that in a thousand years there will be absolutely nothing left to tell the story of our time, for most of the materials of even the heaps of ruins that may be left will be so disintegrated as to offer no clue to the patient scientist, or Americanologist of that time as to the date and manner of their construction.

Where, too, will be our written records? Our State papers, our letters, everything of that nature, typewritten or with questionable ink upon an indifferent quality of paper, become faded relics within half a century and an hundred years from now will be illegible shreds of rags, or masses of dessicated pulp. We read the history of other ages cut deeply in rocks, or graven upon urns, or slabs or tablets of well burned clay; where will other peoples find our history? Why, the writer himself has seen letters of Franklin and Washington, and of authors long before their time that were in a far better state of preservation than are some of our valuable state and other records of but twenty years ago. Our craze for cheapness and expedition has led us into committing grave errors.

Concrete has been suggested as the proper material for the great monument. True, it will outlast stone or marble. In dryer, more equable climes it has endured for ages, but here it will do but little better than granite, the expansion and contraction caused by our great variations of temperature affect the surface so that it soon becomes crazed, then moisture and frost complete the work of destruction. Besides, with cement—an artificial stone, as with marble, or stone, or granite, or slate, or any other natural mineral we might use in building, the effects of fire are the same, either complete annihilation or such damage as to assure thereafter progressive and rapid disintegration. And it is but natural to expect that this proposed great monument would, at some period in its existence, be exposed to fire.

The one material that has withstood the ravages of time and the elements in every climate and under all conditions is burned clay, brick. In Babylon, in Egypt, in Rome, in South America, in Mexico, everywhere, we find bricks, urns and tablets of burned clay, perfect in shape and condition, however roughly, carelessly or imperfectly made they may have been. The one material that has withstood the intensest fire and frost and every condition of our times and climate, and without showing the slightest indication of disintegration, is well burned clay, and of clay, be it tile, or brick, or called terra cotta, must that monument be built, if it is the intention to make it for all time. Nor should there be any nonsense about taking it from every State. Find the best clay in the country and build the one imperishable structure of the country with that, after passing it through the most perfect processes of manufacture our ingenuity can devise and subjecting it to tests that will convince us that there has been no accident or oversight in that manufacture. . . .

. . . While all this talk is going on about a great national monument in Washington, why should not each State erect something within its borders, preferably at the Capital, in the nature of a handsome, permanent monument, raised to its people and progress? Since we have developed such tender solicitude that future generations shall find at Washington some memorial of our greatness, why should we not also take some precautions to indicate, in a modest sort of way, to the inquiring ones of a dim distant future the extent of the country, too, the location of its grand divisions? Let us not do things by halves, let us give posterity a chance?

(From the Atlanta Constitution, February 17, 1907.)

. . . Because he made false statements, in order to bury his wife in a most pretentious manner, G. P. Wright, formerly a prosperous citizen of Atlanta, has been sentenced to penitentiary for twelve months. . . . What a travesty must have been the pomp and display at that funeral! And what nonsense and extravagance there is in most funerals. Indeed, is not the entire system of burying our dead, including wakes, funerals, processions, and burial rites, vulgar, somewhat brutal, and certainly barbaric? It is high time that there be a decided change in those things.

(From the Seattle Post Intelligencer, February 25, 1907.)

. . . The contention made by the labor party that there should be absolutely no labor performed by prisoners is the worst, the most cruel move ever made by that party. It means that the making of shoes, and clothing, by the prisoners for their own use is to be stopped. The breaking of stone for road-making, every and any occupation so far given them, and that competes in the least with honest labor, is to cease! The strength, the aggressiveness and the influence of the labor party are such, too, that we may be sure it will carry its point. To deprive men serving a prison sentence of any form of labor is worse than cruel. We may as well double the capacity of our insane asylums at once, for enforced idleness in prison will certainly mean an increase, a terrible increase, in our insanity percentage.

(From the World, July 22, 1908.)

. . . The recent grave-robbery and the holding of the body of the defunct millionaire by the ghouls for a princely ransom has started an extraordinary amount of discussion in the press and throughout the entire country. Strangely, however, the grave-robbery itself seems to have been lost sight of and the editors have wandered off into the general subject of burial, of the disposal of the dead, some advocating compulsory cremation, others contending that it is unseemly, unchristian, and others again that the State should take charge of and control funerals, burials and all else connected with this subject. . . . There is much desecration of graveyards, true, not in the nature of grave-robbing by medical students, and all that sort of thing as in days past, but the real estate agents have displaced the ghoul. Is there a month that passes that somewhere in the country an old cemetery has not to make way for modern improvements, flats, stores, groggeries, and what not? What becomes of the bodies? How respectfully are they handled? . . . The whole system of funeral and burial, as it has been practiced for years, is repulsive, grewsome, awful. For the unfeeling it is a farce and for the sensitive, the really sorrowing ones, it is a most cruel ordeal. Imagine the feelings of a delicate loving woman that custom prescribes must stand by the open grave of the husband or child, while the pastor drones lugubrious prayers, that nine times out of ten, instead of assuaging grief, are but an added torment, while the rough handed attendants shovel in the dirt; how heartbreaking must be the sound as each clod strikes upon the casket. . . . Cremation is surely the best way. There may be something better devised, but today it is the only way that is clean and decent. Why should there be any prejudice? Surely it must be better to give the remains of those we love, using Marie Corelli's words 'to cleansing fire and pure air, than to lay them in cold vaults of stone, or down, down in the wet and clinging earth. For loathely things are hidden deep in the mold—things foul and all unnameable—long worms—slimy creatures with blind eyes and useless wings—abortions and deformities of the insect tribe born of poisonous vapor—creatures the very sight of which would drive you, O delicate woman, into a fit of hysteria and would provoke even you, O strong man, to a shudder of repulsion. .

(From the Baltimore American, November 4, 1908.)

. . . The last Presidential election showed a rather remarkable landslide toward Republicanism, but this election just over is absolutely dumbfounding. That the Democratic candidate should have slid in, as it were, by the barest majority over the Republican, was quite to be expected, but that the vote of both the great parties should be so decreased, as it was, is certainly astounding. . . . In 1900 the Social Democrats had but 87,814 votes; in 1904 they polled 600,000 and in this election they have piled up 2,480,000, while the Progressionists, a party that was unknown in the 1904 election, have just polled 1,500,000 votes. These figures are significant.

(From the Troy Press, May 8, 1909.)

. . . It is time that the people awaken to the true condition of things in this country. As one of our best writers said, some time ago:

"So long as the rich of this country were primarily interested in adding to their already enormous wealth, the nation was quite secure from all dangers of poverty, all signal tendencies toward waste and effeminancy. But when the 'spending hbait' developed here, and the rich vie with the rich to invest their money in acts which pandered to their vanity and produced nothing really useful to the nation, nothing that tended to produce more wealth, an evil day dawned upon us and the railers at wealth have much of reason to support their denunciations. . . . As long as the richest men in America indulged in no extravagances, made no ostentatious display of their wealth and kept money constantly at work earning more money, all was well. Thanks to this policy, enormous undertakings were constantly under way, giving profitable employment to millions, while the results of their labor were put immediately to valuable and productive uses, that the work of accumulation might go on. . . . Acquisitiveness has been the cause of the building of mighty cities, the draining of swamps, the irrigation of arid land, yes, even the rise of mighty empires, but it has never led to their fall through the disappearance of the means of maintaining life and insuring progress. Those disasters have resulted from exactly opposite motives and practices. The Republic of Rome rose to wealth, worth and power through the same policy that, until recently, was pursued by the rich men of this country. The spirit of acquisitiveness led men to accumulate wealth which speedily became a breeder of its kind and the nation waxed great and strong. But simple manners changed. Wisdom yielded to folly. Greed still prevailed and developed into injustice and cruelty, but it was a greed actuated by a disposition to devour and waste, not to rationally enjoy and to build up.

Roman emperors gilded the oats fed to their favorite horses, dined with vast companies upon the tongues of humming birds, and in almost every conceivable way to worse than waste the products of industry. Such prodigality lead to no returns, left no capital upon which future wealth could be predicated. Nobles vied with monarchs in debauchery and waste, taxes became burdensome, the prosperity of the nation ceased, effeminacy spread to all classes, and the once great empire fell a victim to its own weakness and the hordes of really acquisitive peoples who poured down upon it.

Such is the teaching of history, for the case of Rome is of well nigh universal application. The rule is still in force. The nobles of many European countries and vast numbers of the snobbishly rich in this country who seek to pattern after them are engaged, not in adding to their wealth, but in seeking to make a display in dissipating it. Some of our millionaires are gilding the oats fed to their horses and have reached the stage where they care to dine only on the tongues of humming-birds. Let us beware."

(From the Boston Herald, December 26, 1910.)

. . . One of the most extraordinary characters of the present Congress is Stephen Manning, of the Tenth Illinois district. Though the session is still young he has already made a conspicuous place for himself. Usually new members have little to say during their first session, but in his case, while modest and retiring almost to a fault, the older members defer to him, urge him to express himself . . . and when he speaks, unwonted silence is observed and members from the cloak and committee rooms tiptoe in to listen to him. Commanding of presence, forceful and fluent of speech, he carries absolute conviction to his hearers. In college he swept all before him, scholarships and prizes were showered upon him. . . . A writer of great ability, honored by the universities and societies of other lands as well as his own. . . . it is easy to foretell that with his leaning toward socialism, his wonderful magnetism, and his power over men, it will not be long before he is called to the leadership of the Progressist party, that has already made such startling inroads into the ranks of both Democratic and Republican parties, besides absorbing all the Socialistic, Populistic, Prohibitive and other dissenting and disorderly bodies. If any man can whip this discordant, cross-purpose mass into some sort of homogeneous entity, surely will this cool-headed, brilliant master of men.

(From the St. Paul Globe, March 13, 1912.)

. . . The petition from the prisoners at Stillwater that they be given some sort of work to do, something to distract their minds from the awful strain of enforced idleness, is pathetic in the extreme. These men have committed crimes, true; the State, for the purpose of protecting society, removes them from the possibility of repeating those crimes and gives them an opportunity to reform while being punished for their offenses; but the State has no human nor divine right to drive those men into insanity, to absolutely provent their ever being able to take their places again among the normal, sensible people. Better destroy them at once than to do that. The prison anti-work law is iniquitous, barbarian and worthy of the Dark Ages, not of this country and time.

(From the Chicago Journal, March 14, 1912.)

. . . That prisoners in the penitentiaries of Illinois will be driven to madness unless supplied with work is the consensus of opinion among alienists, students of criminology, clergymen and public officials. The horrible conditions in Joliet, where men are kept for twenty-one hours out of the twenty-four in cells but four feet wide, have startled the friends of the anti-convict labor law, which is blamed for keeping the prisoners idle. Since the new law was passed and the prisoners at Joliet were deprived of work, visitors are practically barred from the institution. Owing to the sullen disposition of the convicts, it is almost dangerous to approach their cells. Shouts, cat-calls and insults are hurled through the barred doors, mingled with yells for something to do. Some day it is feared the dread panic of a prison, when every convict loses his self-control and becomes temporarily insane, will take place. These outbreaks are periodical and beginning with the wail of some maddened prisoner the sound develops into a roar like thousands of wild beasts and is kept up for hours. . . .

(From the Omaha Bee, May 3, 1912.)

. . . Whatever we undertake in the way of the much-talked-of monument should be on a grand scale. Let it take fifty years to build and cost millions. Why not? We are not going to move away tomorrow, and if we but see it begun and prosecuted with some vigor, what matters it if we do not see it completed; our sons will. Make it grand, by all means, as grand as our artists can create it unhampered by any limitations. Our national fault has been that of narrow view and mistaken economy in all that regards the Capital City. We have only planned for the immediate needs of the time. . . . If our population continues to increase, as it has done in the last hundred years, more than doubling every twenty-five years, another century will bring results that can scarce be conceived by him who lives today. Let us not hamper posterity by the mediocrity of our plans and preparations for the future and let us leave something behind us that will keep our memories green in that future. . . .

. . . The trouble with us in any such undertaking is that no one man takes a personal, fatherly interest in it. Our political organization is such that the Cabinet officer or other individual in whose charge such work may be placed, is ambitious only to make as big a show of work as he can during his four years' term, or to cut down all expenses he directs so as to leave a sort of "watch-dog-of-the-treasury" record behind him, or to get along with just as little work, as little interference with his social duties as is possible. It is but a transient interest at best that he can take in it. . . . Lack of personal interest and a pandering to local selfishness are two of our worst faults. Many a Congressman dare not to vote for such a monument or any other great public work, until he has secured a postoffice, far in excess of the needs of some little town in his district. His constituents would accuse him of extravagance with the people's money and a lack of interest in their local welfare. To fall out of favor with his constituents means to lose his election; who among our legislators is big enough to withstand this pressure?

. . . That condition obtains in all our work, our policies, our diplomacy. It is the fault of our form of government and the individual is influenced by the general policy. . . . We build nothing for the great future, we look to four, or at most, eight years ahead; if things stick that long, or last over that period, then all is well. We do the same with our resources, we destroy our forests, we work our land and our mines, everything, ruthlessly, extravagantly, heedless of the great tomorrow, either fatuously believing that these things are inexhaustible, or not caring a rap, providing we get what we need for our own little today. Give this great work into some one man's hands with power to appoint his own assistants, yes, even his own successor, let him develop his own policy and management of the work, pay him well, make his term of office for life, select him most carefully, but, then, let him go ahead!

(From the Katholischer Waechter, Berlin, May 13, 1913.)

. . . We wonder where our American friends are going to land with all their discussion and wrangling over the moot question of the disposal of the dead. For our own part, we do not see that if the State is to take charge of that function and duty, and if simplicity is aimed at, a safe and hygienic disposal and at the same time a permanent resting place is desired, a State repository, why the old catacombs idea is not the best solution of the problem. We know of no more impressive burial place, or one that seems so fitting and respectful as the catacombs at Rome. Those long lines of tablets in the walls, each marking the actual resting place of a Christian, a great saint, a martyr, or simply a true believer, expressed the true democracy of death affected us as never did a grand cemetery, with all its pomp of monuments and wealth of fulsome epitaph.

(From the Washington Conservative, January 16, 1914.)

. . . The most surprising thing about it is that the man —crazy as he must be—has a most extraordinary following, men of all parties, well-known scientists, ministers, writers, workmen and people of all conditions and classes. . . .

When it is known that Representative Manning is to speak in Congress the galleries and halls are packed, and during his speeches, despite the frantic efforts of the Speaker and the doorkeepers, deafening applause punctuates his every period. Yet, when one analyzes what he says, his utopian notions of democracy, his impossible socialism, his clamoring for a universal disarmament, one quickly realizes that those ideas are but the emanations of a brilliantly unsound mind. . . . one of the most revolutionary, idiotic ideas that any alleged sane man has ever preached.

(From the Washington Conservative, November 1, 1914.)

. . . These reformers of the new school, cranks if there ever were such, go a step too far when they seek to deprive us of the poor satisfaction a bereaved family has in disposing of its dead as it wishes and surrounding the obsequies with such ceremonies as seem proper in each case. The cry of the "Democracy of Death" may sound well enough in a Socialist meeting hall, but will not go down with the great majority of the American people!

(From the New York Register, November 4, 1914.)

. . . It is more than dumbfounding that in the elections held yesterday in four of the great cities of the country, however scratched may have been the ballots as to the local candidates and the several financial propositions under consideration, the vote to have the municipalities "Build and Operate Crematories, or Other Means for the Compulsory Disposal of the Dead," was overwhelmingly in favor of the scheme. It is suspected that this is but one move in a much more elaborate plan, that Representative Manning will eventually try to have forced upon the cities and the States. . . . His power over the people is most extraordinary. . . . No sooner does he start upon some such fool propaganda but that able lieutenants, persuasive talkers all, ministers, Government officers, labor leaders and demagogues are mouthing the same crank notions in every part of the country.

(From the Boston News, January 31, 1915.)

. . . The mutiny, or revolt, that occurred in Leavenworth prison yesterday can be directly attributed to the fact that no labor of any kind is permitted in our prisons. The men were simply driven to desperation. . . . That four of the guards and twelve of the prisoners were killed outright may be a little more potent than the mere academic discussion of the pros and cons of the subject in awakening our authorities to the realization that something must be done to give those people something to do, if not something to think about, whether organized labor is pleased or not.

(From the San Francisco Call, October 14, 1915.)

. . . That the State should take charge of the disposal of the dead is one thing, even that it should make incineration obligatory is to be tolerated, but this new idea of petrifying our bodies, or whatever they term the new-fangled process, is another matter, and one to which we, democratic, progressive, law-abiding citizens, as we may be, do not counsel submission; indeed, we would feel justified in advising armed opposition to any officer offering to thus desecrate a family's dead. . . . It is regrettable, however, that in the demonstration made last evening against this new movement the undertakers' society should have had so conspicuous a part.

(From the Hartford (Conn.) Social Reform, October 11, 1915.)

. . . What nobler end could we aspire to? It seems to us that nothing could be grander or more sublime than that every citizen, however lowly and poor in life, should have an equal chance with the highest before the great court of the Nation, that his or her body would have for its final resting place the noble and everlasting monument to the nation at Washington, in fact, form a part of that structure! A true democracy, indeed. . . . Little by little, or, rather, when we consider the great opposing forces, the huge obstacles in the way, we may say that by great strides are we getting to the point where the Constitution, written by the Fathers of the Nation, really dominates our laws and where we may say that the destiny of that nation, as planned by those wise and far-seeing men, is really being fulfilled by us who may with justice proudly claim, for the first time in many years, that we actually live in a Republic.

(From the Clay-Worker, June 15, 1915.)

. . . The sentimental part . . . is the only one about which there can be any question. The practical part is certain, assured and absolutely correct. Burnt clay, in bricks, in terra cotta, in structural tile, has been used since people built other than twig or log hut shelter, or made their homes by burrowing in the ground. The oldest extant structures in the world, the best preserved monuments, the least defaced records are of burnt clay, and in our own day and time, seven-tenths of our buildings are constructed in greater part of the burnt clay products, and as we build better and grow wiser the more uses do we find for those materials, not only in our buildings, but in a thousand other ways. . . . In the old national cemeteries, those that have not been wiped out of existence by the march of our commercial progress, it may be observed that the little headstones marking the soldiers' graves have been broken, are defaced by the ravages of time, and even the best preserved of them but poorly serve their purpose, as the names or numbers cut in them for the identification of the dead have become almost totally obliterated. It would not have been so had the suggestion of one of the big manufacturers of the time of the Civil War, Mr. H. B. Camp, of Akron, been adopted. He offered to make "grave-markers" of burnt clay, with the name and identification of each soldier deeply molded in those slabs, and for a sum greatly below the cost of those crumbling head-stones. . . . Years before that Mr. George H. Johnson, one of the pioneer manufacturers in the same line, made a terra cotta coffin that could be hermetically sealed and that many newspapers of the time advocated as the only sanitary, permanent repository for the dead. But it never came into general use. . . . Indeed, the old idea of a silk-lined, much-besilvered, wood receptacle for the dead has a most tenacious hold upon the people. . . .

(From the New Orleans Every Saturday, June 19, 1915.)

. . . The idea of incorporating a human body in a great block of clay, and burning the whole in a regular process of manufacture to form a huge brick, so to speak, to be built into monuments or other structures by the State is so novel a one as to take us completely off our feet. We are not prepared at this time to express any decided opinion about it, save that since it is a plan, one of the pet schemes of the "wisest man among us," it must be all right. . . .

(From the Chicago Tribune, Wednesday, January 12, 1916.)

. . . In view of what happened in Chicago yesterday we may be justified in reprinting a paper written by Upton Sinclair years ago in one of the then great weeklies. He has had so much to do with the development of the new party that the thoughts he expressed then seem really prophetic when we perceive the conditions that led to placing that new party in power:

". . . It is so hard to face the thought of change; the thing as it is is so very impressive. Yet we know through history that society has undergone many and vast changes—that our grandfathers, if they could return to earth, would scarcely recognize it as the same. Evolution is not mere fancy, it is fact, and the hardest of facts.

"Consider the French Revolution for an instance. How completely that changed the aspect of French society. And what was the cause of the French Revolution? It was that the king and nobility had possessed themselves of all the powers and opportunities and had by means of taxes drawn all the wealth of the whole country into their hands. The French people had stood everything, but they could not stand being required to pay taxes when they had absolutely nothing with which to pay them. So they rose. It had developed first, that political monopoly was inevitable; and second, that political monopoly was unendurable—that it meant the ultimate extinction of all men except the monopolists; and so the French people established a system whereby political equality was guaranteed to every man by the entire community. To-day, in the same way, our present industrial masters are concentrating the wealth of the whole country into their hands, by means of the economic form of taxation, which is profits; and that in the same way they are bringing about a state of wealth concentration, or economic apoplexy, which will cause a revolution, bloody or merely commercial we cannot tell, by bringing the masses to a point where they have either to throw off the yoke or starve.

"What I mean by economic apoplexy is this: is it not obvious that sooner or later the amount of capital seeking investment in the country must be greater than the number of investments—that is, the profits that the people's spending money can furnish? And when this is the case, then the profits must grow less; and as profits grow less mills and factories must close and millions of men must perforce be thrown out of work. That condition is present; we already feel it.

(To be Continued.)

BRICK PLANT BURNED.

The plant of the Croton Limestone and Brick Company in Hickory Township, near New Castle, Pa., was almost entirely destroyed by fire on the second of this month. The origin of the fire is unknown. The loss will amount to $25,000, on which there was no insurance carried. One hundred men have been thrown out of employment, and the work of rebuilding the plant will be started in a short time. The new plant will be modern in every respect, and will be equipped with the most modern and improved appliances.

LABOR-SAVING MACHINERY AT THE BRICK PLANT OF GRIM BROS., ALLENTOWN, PA.

Manufacturers in general and brick manufacturers in particular, realize and appreciate more and more all the time the importance and advantage of labor-saving machinery and appliances. Indeed, if brick manufacturers expect to compete with their up-to-date neighbors, they find the installation of improved machinery and methods of manufacture necessary.

A notable instance of this is illustrated at the soft mud plant of Grim Bros., at Allentown, Pa., which is fitted throughout with modern machinery, including a heavy style "A" Martin steam power brick machine, with pug mill, clay conveyors and disintegrators, turning out 30,000 brick daily. They have recently installed Martin's patent system of handling and drying with a capacity of 30,000 per day. In operating this system, which is on the cable plan, the brick are handled from the machine, through the dryer to the kilns by machinery, and the use of skilled labor is avoided and cars and trucks are dispensed with. Grim Bros. are highly pleased with this latest addition to their equipment. Their plant is a model of neatness and shows the advantage of having a plant well laid out at the start.

Grim Brothers' Brick Plant, Allentown, Pa.

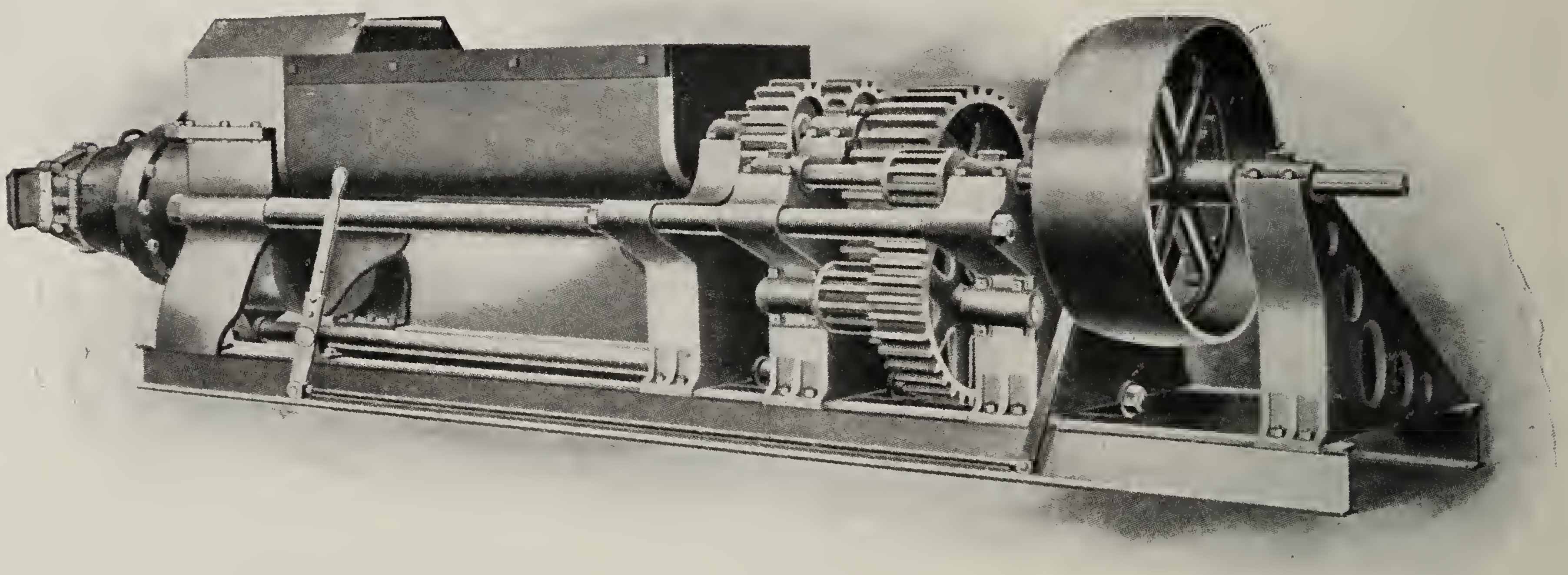
The success of this system at the Grim plant justifies the claims the manufacturers, the Henry Martin Brick Machinery Mfg. Co., Lancaster, Pa., have made for it.

The Chicago packers should have heavy damages from Edward Page Caston, of Chicago, who testified recently before the House of Lords that American cigarettes were worse than Chicago tinned meat. Of course he admitted that the cigarettes were worse, but still the comparison is an odious one.

A LARGE CAPACITY BRICK MACHINE.

WE PRESENT herewith cut of the new "Fate Special" combined brick machine, which is the largest, and heaviest combined brick machine ever made, and was designed and built for their Western representative, Mr. Lew Thorne, Almeda, Cal., and especially for the Pacific Coast trade, where an exceptionally strong machine is required, and one of large capacity. While the capacity of this new machine is very modestly put at 100,000 to 150,000 brick per day, it is confidently expected by the J. D. Fate Company that with good clay and under favorable circumstances, double this capacity will be obtained.

The dimensions of this new machine are: Length over all, 25 feet; height, 6 feet 6 inches; width, 6 feet 4 inches; width of pug shell, 42 inches; length, 10 feet; main auger shaft, 6-inch diameter; counter shaft, 3½ inches in diameter; main gear wheel, 12-inch face; intermediate and pug gears, 8½-inch face; pulley is 48 inches in diameter and 16-inch face; weight, 30,000 pounds.



The Fate "Special" Combined Brick Machine. Daily Capacity 150,000 Brick.

In the pug mill is placed the same double shaft arrangement, which has proved so desirable in all their other combined machines, and which has shown that with the two shafts in the pug mill, the tempering and pugging capacity is more than double that of the single shaft pug mill of equal length. The large auger shaft bearing immediately under the rear end of the pug shell is of the Marine Thrust type, and receives the major portion of the end thrust or the auger shaft, so that the rear auger shaft bearing has comparatively a small amount of the end thrust to take care of, and this is a point where much difficulty is sometimes experienced and this arrangement is considered a valuable feature.

The pug shaft bearings are also of the Marine Thrust type, and the end thrust of these shafts are thus nicely taken care of, and the tendency to heat in this bearing is reduced to the minimum. The machine is compound geared, and all of the gears are broad faced and heavy, and amply strong to withstand the severe strain to which so large a machine will be subjected.

While the machine was especially designed for the Pacific Coast trade, it will without doubt prove a valuable machine for any brick plant desiring an extremely large, strong machine of large capacity. Sectional views of the machine are shown on page 301 of this issue. The manufacturers, the J. D. Fate Company, Plymouth, Ohio, will be glad to explain the machine more fully to any one interested.

Written for THE CLAY-WORKER.

PITTSBURG AND WESTERN PENNSYLVANIA NOTES.

THE BRICK BUSINESS in the Pittsburg District continues in very good shape, nearly all of the plants being run to their full capacity. The manufacturers report conditions entirely satisfactory, and several of them have gone so far as to say that if they received much more business they would be utterly unable to handle it at the present time. The works have nearly all been put in good shape, and there will be nothing except the possibility of accident to prevent a good fall run, the orders being already on the books. The jobbers of this territory are also jubilant, as they say that orders are coming easier than they have for several months, and there seems to be no end to the business.

Several of the small manufacturers seem to be the only ones who have any complaint to make, one or two of these people claiming that with their comparatively small capacity, they are standing small chance of competing with the large number of mightier concerns who are doing business here. On the other hand, however, the writer has seen several instances where orders were placed with these smaller concerns on account of the inability of the larger ones to make prompt deliveries of the material, whereas they would not have received the business except for the crowded condition of the other works.

The fire brick business has not been better for a long time than it is at the present time, and has been all summer. The summer "close downs" of the many large iron and steel mills gave the much-needed opportunity for repairs to the blast furnaces, crucibles, puddling furnaces, open hearth departments, etc., all of which require large numbers of fire brick.

Paving brick manufacturers and dealers likewise report a large business, most of which is due to the many small towns in this vicinity paving many new streets during the summer months. It might also be added that there still remains a great deal of this work to be done before the advent of winter, and orders will still be placed for a great number of pavers. Several of the traction companies that are building new lines in this district have adopted brick for paving the right of way instead of the Ligonier block that has been in common use for many years.

The report of Building Inspector S. A. Dies shows that building in Pittsburg for August fell off about $200,000, as compared with August of last year. One hundred and twenty-five permits were granted for new buildings to cost $912,810; 29 permits for additions to cost $19,510; 93 permits for alterations and repairs, $52,798, making a total of $985,118. The figures for August, 1905, were $1,276,301. Building for this year, up to and including Sept. 5, amounted to $50,143,000, which is considerably below the figures for the same period of last year, which were $63,310,000. Prominent builders state that the reason for this falling off has been due entirely to labor troubles in this vicinity. At the beginning of the year it looked as though this would be a banner year, but when the trouble with labor started it had the effect of causing any prospective builders to postpone their projects until conditions became more settled. This statement is substantiated by the fact that the architects have drawn plans for many millions of dollars' worth of work that nothing whatever has been done on up to the present time.

Graphic Illustration of the Immense Size of the Fate Special Combined Brick Machine. The Men Are Standing in the "Pug Shell."

For the first six months of this year Pittsburg showed an increase of 3 per cent over last year in building construction, and Allegheny showed an increase of 19 per cent for the same period.

The Harbison-Walker Refractories Company will award a contract this month for the grading and further improving of their quarries at their plant at Layton, Pa. A contract will also be awarded for the quarrying of 60 tons of rock daily.

A charter will be asked for this month for a corporation to be called the Beaver Falls Art Tile Company, which will manufacture glazed and encaustic tile, and other clay products. The home office of the company is at Beaver Falls, Pa., and the applicants are T. S. White, S. P. White, F. W. Walker, John B. Reeves and J. M. May.

The Federal Clay Products Company has been awarded the contract for furnishing the fire brick to be used in the paving of several streets of Elizabeth, Pa. The brand known as their "Pittsburg Paver" will be used.

An excellent vein of fire clay was discovered the early part of this month at Caldwell, Clinton County, Pa., and a new fire brick plant will be erected in the vicinity in a short time. It will be promoted and financed by local capital. The clay is of an excellent quality, and the vein is from ten to fifty feet in thickness. The surface clay can be dug with a pick, but after going to a depth of ten feet the pick makes but little impression, and test holes are now being drilled.

The plant of the Glesendon Fire Brick Company at North Bend, Clinton County, Pa., has been sold to the Dover Fire Brick Company. The plant will continue to be operated, and a number of improvements will be made. The plant is modern in every particular.

Pillings & Crane, Machesney building, Pittsburg, have taken over the entire product of the plant of the Osceola Silica and Fire Brick Company at Osceola Mills, Pa. The product will be marketed through the Pittsburg office of the purchasers. Mr. Edward E. H. Humphreys is in charge of the brick department of the Pillings & Crane Company.

The Manorville works of the Harbison-Walker Refractories Company closed down about the first of this month, and it is said that the plant will be dismantled and the machinery and equipment moved to Templeton, Pa., where the company has erected new works. It is the intention of the company to make the Templeton works the largest in the country.

The Monongahela Vitrified Brick Company, which has its main offices in the Empire Building, Pittsburg, and operates a plant at West Elizabeth, Pa., will put additional stock on the market to raise money to enlarge and further equip the plant, and increases the capacity. The company is capitalized at $125,000, and all of the stock has never been issued. J. W. Fritz is the secretary and treasurer of the company, which manufactures building, paving, sewer and fire brick, hollow building blocks, chimney flues, window sills, water tables, fancy building fronts, cornices, tombstones, monuments, etc.

The new brick plant of the Merchants' Coal Company, at Boswell, Pa., was placed in operation the first of this month, and has been working very successfully. The company is going to erect a large plant for the mines at Boswell, and will also construct a number of buildings for their stores, offices, power plant, etc., and will manufacture all of the brick required at their own works. These brick are now in the kilns, and no brick will be placed on the market until the requirements of the company are filled, and everything in first-class working order.

The Lawrence Sand and Brick Company, of New Castle, Pa., has been organized and granted a charter. The capital stock is $50,000, and the incorporators are T. P. Williams, Rees L. Davis and L. M. Uber. The new company will manufacture building and paving brick, and will erect a modern plant as soon as possible.

A. J. Gray, of Ford City, Pa., with several other gentlemen well known in the brick business, has perfected plans for the erection of a fine modern brick plant at Blairsville Intersection, Pa. The plant will be built on the Gray farm, where an excellent grade of clay has been discovered.

Dinsmore Brothers' Brick Works, at Naomi, Pa., had a narrow escape from destruction by fire the latter part of last month, and were only saved by the hardest kind of work on the part of the people who lived in the neighborhood. The plant is well equipped with steam pumps for use in case of fire, but as there was no steam in the boilers at the time, the apparatus was useless, and a hand brigade was formed, which after a couple of hours of hard work, had the fire under control and had prevented it spreading to the main buildings of the works. One kiln was destroyed and a small building, which will be replaced at once. The loss, outside the destruction of the kiln, will amount to about $500, on which there is no insurance.

W. A. Black, representing the Union Stone and Brick Company, of Washington, Pa., and the Vulcan Clay and Brick Company, of Wellsville, Ohio, secured the orders for the brick to be used in the Knights of Pythias Home, at Harmony; the Pennsylvania railroad station, at Washington, and the new Postoffice, at Wilmerding, Pa.

An application for a charter for a corporation to be called the Haws Brothers' Fire Brick Company will be made on the 28th of this month. The company will build a new fire brick brick plant at Macdonaldton, Pa. The parties behind the company are John Lochrie, William H. Haws and John D. Mandeville. W. H. Haws is one of the best known fire brick manufacturers in Western Pennsylvania, having been at the head of the W. H. Haws Fire Brick Company, which was bought out some years ago by the Harbison-Walker Refractories Company. Mr. Haws, with several of his former partners, then built a brick plant at Mt. Union, which plant he is still interested in.

The Central Savage Brick Works, at Rockwood, is overrun with orders, the brand known as the "Rockwood Buff" having become so popular that the plant is almost swamped. C. E. Statler is the manager of the plant, and was forced to call on his father, Emanuel Statler, of Salisbury, to come to the works to assist him in getting things straightened out.

David Hutchinson, one of the first brick manufacturers of Pittsburg, and one of the oldest residents of this city, died at his home, Stevenson and Bluff streets, on August 20. He was 83 years of age, and was one of the first Pittsburgers to engage in the brickmaking industry, establishing a brick works and yard on Vickroy street a short time after moving to this city, sixty years ago, which he conducted until he retired, twenty years ago. He paid strict attention to business, and was successful from the beginning, accumulating quite a fortune. He was the largest real estate holder in the ward in which he lived, and was a prominent factor in the public affairs of his home ward, serving for several terms in Pittsburg councils, and holding various other public offices. He was an intimate friend of William Flinn, who was also engaged in the brick business, and who was, like Mr. Hutchinson, one of the pioneers of the local brick industry. He is survived by two daughters. Since retiring from business, his interests have been looked after by his son-in-law, George Snow.

The plant of the Pennsylvania Silica Brick Company, located at Kingston, Pa., has been sold by the sheriff, and was bought in by one of the stockholders, who is said to represent two of the principal owners, Messrs. McCabe and Humphreys, of Pittsburg. The plant has been idle for the past three years, and will take several thousand dollars to put it in first-class shape. It is a machine plant and has six modern kilns. It is located at the base of a good strata of silica clay, and is but a few hundred yards from the plants of the Soisson Fire Brick Company and the Ligonier Silica Brick Company, both of which are running full time.

G. D. S.

WHERE SAN FRANCISCO MAY BUY BRICK.

There is an item going the rounds of the press under the above head, stating that Consul-General Ridgely, of Barcelona, Spain, has sent a letter from a brick manufacturer of that far-away country to the authorities of San Francisco, offering to furnish brick for the rebuilding of the city. The consul-general speaks highly of the brick, which, he says, are light gray and resemble unpolished marble blocks.

Written for The Clay-Worker.

THE VIGO CLAY CO., TERRE HAUTE, INDIANA.

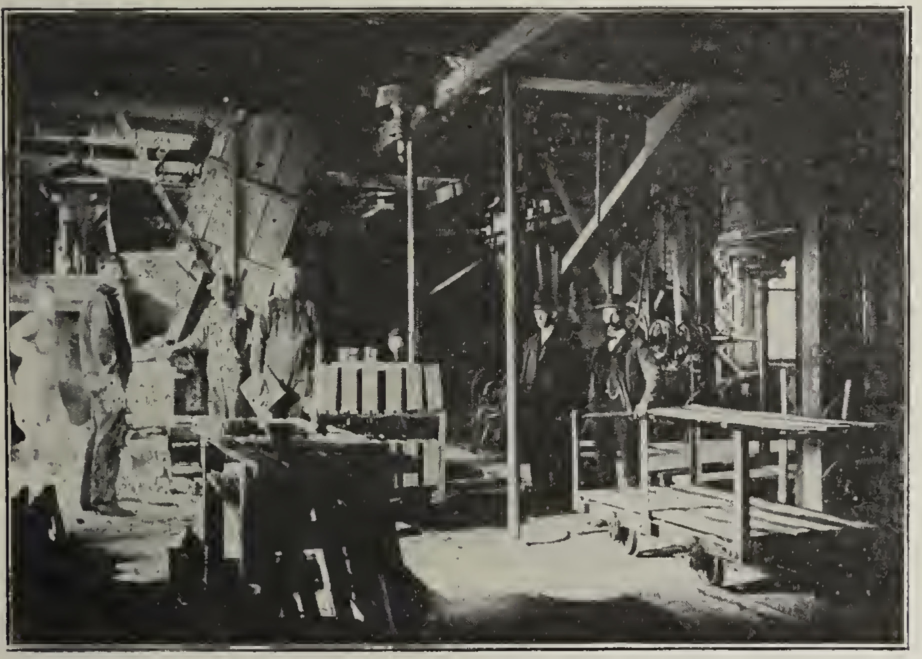
WEST OF TERRE HAUTE two miles and nestling close to the west bluffs of that beautiful valley of the Wabash, can be found the splendid factory of the Vigo Clay Co. So well has the site been selected, that we can hardly picture in the mind's eye any feature that would materially add to this location to make it a more ideal place for the manufacturing of clay products. Looking to the west one is completely captivated by the beauty of the landscape. The bluffs gradually rising to some ninety feet above the plant, and at a distance of about one-half a mile the sky seems to touch the tree tops as they gently sway back and forth. On to the west the country is generally broken and many fine deposits of shale are yet to be had almost for the asking. On the north the bluffs extend out, as if to meet the river, but apparently fearful that it might obstruct the channel of the beautiful stream, gently recedes again but standing as a sentinel to guard against high water and to break the bleak wind of winter. To the east and up the river as far as the eye can reach King Corn is monarch for miles. That bottom corn that the Hoosier is so likely to make big talk of. To the south is the elevated tracks of the Vandalia railroad. Immediately to the east and in front of this modern plant there has recently been built an interurban railroad.

View 1. Shale Pit of the Vigo Clay Company.

Coming from the east, as many of our splendid clayworkers have, but not losing sight of that guiding star, Mr. H. S. Preston, sought and found the treasure where the rainbow kissed the earth and upon this spot, five years ago, broke ground for the new clay factory which was destined to be known as the Vigo Clay Co. Not being over burdened with that filthy lucre, "tainted coin," Mr. Preston set out to find assistance and did find it, not only did he find money but men of sterling character and business ability. When they had erected their buildings and four kilns decorated their yard, they harnessed themselves for heavy work and they got it, for it is well known among clayworkers that the shales of this section require no little skill to produce a good ware, however, they soon conquered this old lake deposit and the trade liked the ware. Soon they became aware of their inability to care for their very rapidly increasing business. It did not take long for the pulse of the nineteenth century to carry them on to the greater capacity. Two additional kilns were built, soon two more, and so on; to-day the plant stands second to none, with sixteen kilns. The entire plant is neat, compact and built for convenience, demonstrating clearly the ability of those who have spent many long and troublesome hours in solving those almost insurmountable problems that are inevitable in all clay factories.

The product of this plant is fireproofing and vitrified drain tile and much of their product goes as far east as Philadelphia, Pa., south to New Orleans, La., west to Kansas City, Mo., and several shipments have been made to Canada. Especially is this so of their book tile, used as sheeting. The drain tile is sold throughout the central west and south. Very little stock is to be seen upon their yards, and the plant has been running on fireproofing for several months and have contracts that will keep them busy till late in the winter. Many valuable orders of tile have been turned to other companies.

This Company has met with great success in producing fire proofing for the construction of grain elevators. This product is fast gaining ground for the above-named purpose, and is said to be far superior to any other material by men who are qualified to judge its merits. Not long since a large elevator was built by Albert Schwill & Co., at South Chicago, Ill., of steel and fireproofing, which required 165 carloads. This elevator is 150 feet high and the grain is stored in huge tanks 25 feet in diameter and 92 feet high. There are 24 of these tanks holding 1,000,000 bushels, the operating building is 60x 75 feet square; another elevator of similar size has been built at Harvey, Ill., and at Champaign, Ill., and another at Sheldon, Ill., by the Vigo Clay Co., the last two just completed.



View 2. Making the Block.

Many factories, warehouses and hotels, residences and hundreds of foundations have been built of this material with splendid results.

This company owns 140 acres of land surrounding their factory, under which is a vast wealth of shale and coal. To the west and immediately back of the plant is the shale pit and mine as can be seen in view 1. The shale varies from 20 to 32 ft. in thickness and is of a very plastic nature. About two foot of soil is removed by scrapers, the shale increases in thickness with the bluff. The shale is blasted loose and is loaded into one yard end dump cars by laborers and delivered to foot of incline, the work is done by contract for which the company pays 17 cents per yard.

The mine is an incline as can be seen in view 1, and has an average 6-foot vein of bituminous coal. This work being paid for at the regular scale wage. The shale and coal are hoisted by wire cable up incline by a steam hoist, to fifteen feet above the level of the plant. From here the shale is either dumped into chutes that feed the dry pan or is stored. The coal is carried on an overhead tram way in the mine car, either to the boiler house or is delivered to the kilns, as can be seen in figure 3. This coal costs about 85 cents per ton delivered to the kilns mine run. The coal is of a very good quality. It will require many years to exhaust this vast body of shale and coal.

The shale pit drains into the mines and at all times insures a dry pit. The water in the mine is handled by a large steam pump with success.

All machinery and equipment of this plant was supplied by the American Clay Working Machinery Company and has given proper satisfaction. The pan room is 28x30 and contains one nine-foot dry pan which grinds from 90 to 100 tons of shale each ten hours.

The machine room is 28x76, here is installed in a very convenient way one auger machine and one pipe press as shown in view 2, the auger machine being in operation, making partition blocks. This machine will produce ninety ton of blocks each ten hours. The pipe press is of a late and substantial pattern. Mr. H. S. Preston is seen in the extreme right of view 2.

Two hundred and fifty-four tunnel cars are kept busy constantly in operation, both fireproofing and tile being dried upon them.

The dryer is 75x90 feet and contains 24 tracks. Steam is used to dry the ware, exhaust steam by day and live steam at night, and here is given a splendid opportunity to study the advantages of steam drying under three different conditions, as this dry house contains 4 single tracks, 4 double tracks, and 2 quadruple track compartments. It is the opinion of the writer that the single tunnel dryer has many advantages over the other styles.

View 3. The Plant Seen From a Distance.

There are sixteen round down draft kilns on the yard varying in size, as follows: Eight 22-foot, two 25-foot and six 28-foot in diameter. All furnaces of these kilns are of the old basket pattern. On this yard the small kilns are preferred for tile or soft ware, while the larger ones give best satisfaction where hard-burned ware is desired. The time required to burn off these kilns is as follows: 22-foot kiln, five days; 25-foot kiln, six days, and 28-foot kiln, seven days. One ton of coal is consumed to each three tons of ware in burning.

The kilns are paralleled by a railroad switch off the Vandalia. These tracks are lowered for convenience of loading. This company has recently installed a system of separating the oil from the condensation of the steam from the dry room before it is returned to the boilers, which they think will add materially to the life of their boilers, of which they have three 80 h. p. tubular boilers carrying 90 pounds steam pressure and were supplied by the Terre Haute Boiler Works.

The engine room is 22x24 and contains one 250 h. p. Crawford & McCrimmon engine; also a complete Westinghouse electric lighting plant.

Several improvements are contemplated by this concern in the near future. The workroom is to be enlarged and another Auger machine installed. Considerable new machinery added to machine shop and a one hundred and twenty foot brick stack will be erected near boiler house for boilers.

The room in which the dies are stored is made fireproof and the dies are kept in splendid order. There are fifty-three dies in all, each die is kept in its individual locker. When not in use it is carefully oiled and stored away.

A careful regard for neatness and detail has done much to make this plant a success, and the splendid quality of their employes bespeaks of prosperity, contentment and happiness.

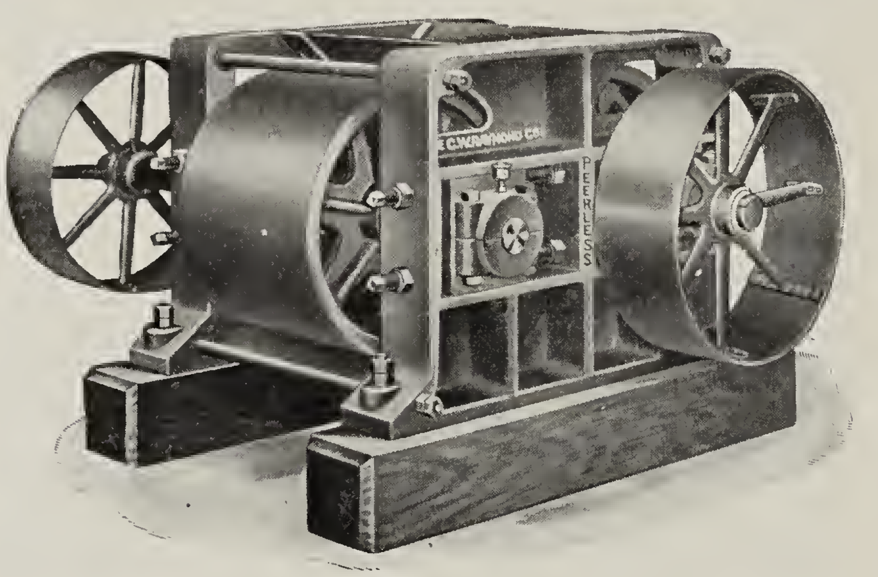
The officers of this company are as follows:

Lewis Duenweg, president; J. A. Dailey, secretary and treasurer; H. S. Preston, vice-president and superintendent.

E. S. N.

PEERLESS CRUSHER.

The C. W. Raymond Company, of Dayton, Ohio, have designed and marketed a new smooth roll crusher, which is well shown by the accompanying illustration. Its simplicity, as well as strength and design, commend it to the critical buyer of this class of machinery. The heavy side frames are built of one piece of cast gray iron, plentifully ribbed with heavy projections. These sides are held by heavy wrought iron tie bars passing through them from out to out, firmly uniting both frames. In this rigid frame work the large rolls operate.



The Peerless Crusher, Made by the C. W. Raymond Company.

Means are provided by heavy adjusting screws for changing the distance between the rolls, so as to impart any degree of fineness to the material. The rolls are chilled faces and ground to a true surface. They are evenly balanced so they can be operated at high speed without excessive vibration. The shafts are all steel, 4 inches in diameter, having unusually long journals.

Another innovation in crusher construction is shown in the Peerless, by the adjustable hopper or feeder, whereby the amount of material entering between the rolls can be carefully regulated. This hopper can also be adjusted so as to act as a spreader for the material, feeding the rolls evenly over their entire surface. This crusher is built in two sizes, known as the No. 1, with rolls 24 inches in diameter and 24-inch face; the No. 2, with rolls 24 inches in diameter by 18-inch face. Detailed information will be supplied on application to the manufacturers.

Sometimes Government investigations strike the public about like the circus strikes the small boy—they furnish some absorbing scenes, but the concert or concluding act does not come up to the expectations that have been developed.

Written for The Clay-Worker.

NEW YORK AND THE EAST.

THE PAST MONTH has been one of continuous activity in the brick trade throughout the East, though prices have not been quite so firm on the whole. The price of all building material, including both brick and lumber, have declined, though the decline in brick has been less, relatively, than it has in lumber. The result is that some makers have slowed up a bit in their operations, but, after all, this makes no material difference. The best of the brickmaking season is past, as the best of the season for construction work has also past. It is coming fall when all these operations are slower and there is less activity in all directions. It is, perhaps, to the credit of brick as a building material that it hasn't declined any more. Numerous unfavorable factors have been involved against it, but apparently they have had no influence beyond local changes which have been reported in a few instances. Unquestionably brickmakers can feel well satisfied that the situation has not changed more when they stop to consider all the influences which have been brought to bear against them, including the steady crying up of the benefits of the new concrete construction. No matter if it has been widely advertised, it has not made any inroads into the demand for brick in this section of the country. It doesn't seem as though it was likely to do so. Brick has become too firmly intrenched in the minds of the public and builders have tested it too thoroughly. They haven't tested the new concrete and if brickmakers do as they should do, there will be little chance for them to do so in the near future. The expense, where it has been used, has proved greater than has been estimated, consequently it hasn't proved so attractive as it might have done under other circumstances.

The New York market is active. Building interests continue to purchase Hudson river front and fire brick as fast as same arrives in New York, and prices are well maintained by all manufacturers. Jobbers are indisposed to shade quotations and dealers are quite as anxious as any of the other interests to maintain the values at present level. There has been a good deal of a cry of trust and with a certain part of the New York press anything that savors of a combination is designated as a trust. The Hudson River Association has been dubbed a trust and there was much unconcealed glee when the prices declined last month. The sensational press immediately declared more or less vociferously that another trust had been smashed and that its iniquitous career was forever ended. Perhaps so. Maybe the old New England observation that what they don't know won't worry them will apply, and it will be safe enough to let it go at that. Meanwhile the brickmakers who have been accused of forming a trust are busy making brick and selling them at profitable prices. That, after all, is the main feature in the business. Everything else is ulterior and has no abiding influence. Prices now are: Front buffs, No. 1, $32.00; grays, shaded and specked, $32.00; white, No. 1, $32.00; Hudson river common, $6.00 to $6.50; light, hard, $5.00 to $5.50; pale, $4.00 to $4.50; No. 1 fire, American, $25.00; No. 2 fire, American, $20.00; Scotch, $35.00.

The only influence which has affected the brick interests much during the month just passed has been the excessively rainy weather. August was an extremely wet month. It rained more than two-thirds of the time, frequently with sharp and heavy showers, which came up so rapidly that it was impossible to protect the brick in the process of making. It is impossible to estimate with any degree of accuracy how seriously the interest has been damaged, but it is safe to conclude that the output for August has been materially reduced by the excessive moisture. This has, perhaps, helped the market situation somewhat and undoubtedly has had some influence in stopping any downward trend of prices which may have occurred. It doesn't appear that there will be any farther reduction this fall. Perhaps, on the contrary, there will be an advance. It looks like it now. The rain has been the main feature in any gloom which may have settled upon the brick industry in this part of the country.

Along the Hudson.

The Hudson river yards have had their share of rain the past month, and the output has been reduced in consequence. It is hard to estimate how seriously the business has been interfered with, but it seems certain that it has been much reduced. A good many yards lost a considerable portion of some of their burnings which would have been in the furnaces now. It will require a dry September to enable makers to overcome the difficulty they have experienced in August. And September promises to be nothing of the sort. On the contrary, it has opened as wet as August, and if it continues there will be difficulty all through the month.

The same observation applies to the Hackensack yards. Great damage has been wrought by water. Some makers are of the opinion that their output has been reduced below that of last year by the liberal moisture in August. It is hard to tell about such matters, but it is known that the numerous rains and the hard showers have been injurious and the losses have been considerable.

The yards in both localities have been and are filled with orders. The finished stock is taken as fast as they are ready for shipment and the question of prices doesn't seem to enter into it at all. Many buyers scarcely ask the price. They feel sure that they can use profitably whatever they can get. regardless of price, consequently they do not undertake to question the present quotations. The reduction, as pointed out last month in these columns, had the effect of saving the New York market to the Hudson river and Hackensack manufacturers. It is impossible for outsiders to compete against them. It was a shrewd move and it served two purposes, as was detailed last month. The effect hasn't disappeared yet and probably will not this fall.

The New England Situation.

In and about Boston the same difficulty has been experienced. The weather has been wet, so wet that much damage has been done. It is difficult to find out, but one authority thinks that the reduction in August has been at least one-third. The market is well sustained and there is a good, steady volume of business. The outlook for building construction is reported good and the opinion is freely expressed that prices will not go lower than they are now. There is a feeling among some members of the trade that an advance is eminently to be desired. It is practically settled that there will be no reduction. Prices are: Common S. S. brick, delivered on the job, $9.50; light hard, $8.50; New Hampshire culled, W. S., $14.50 to $15.00; sewer brick, $11.50; Philadelphia face brick, in car lots, laid down, $24.00.

New Hampshire makers are busy. In fact, there has never been a season when they were any more so. They have had all they could do ever since the season opened, and the conditions are quite as satisfactory now. Boston builders are asking for brick constantly and sales have steadily increased all through the season. It would be possible to sell profitably many more than they can produce this fall. Prices trend upward rather than downward and demand is heavier than it was last month. The season promises to close in a blaze of prosperity.

As has been previously pointed out, makers of brick in Maine have done their work profitably this year, and even though they have suffered somewhat from unfavorable weather in August, it hasn't affected them as seriously as it has the makers farther south, and the yards are in pretty good shape. Sales have been good all the season, and just at this time, when the season is about to close, the outlook is quite as good as it was at the opening and a good year to come is predicted.

Vermont has done more business in brickmaking during the summer than ever before. Home demand has been steady and there have been liberal shipments to the large cities to the south. Massachusetts cities come to Vermont for brick, and some shipping has been done to New York through the Champlain valley and via Bennington. That isn't so common since the Hudson river manufacturers reduced prices, but till then shipments that way formed an important part of the trade of eastern Vermont makers.

Connecticut has been active all through the season. There has been a good home demand and some shipping has been done to New York and Boston markets. This hasn't been as large as it has some years, since the home demand has been heavier, proportionately. The market promises to hold steady during the remainder of the season. A dry September would be welcomed by makers all through the State. It would enable them to catch up with their orders and get something ahead for next spring's demand before the season closes.

With the Jersey Brickmakers.

Passaic, N. J., has been a good brick market this season and promises to be quite as good the coming season. Building operations aggregating $2,500,000 have been carried on since the season opened and one-half of it represents new mills and factories built exclusively of brick. Negotiations are now under way for the location of a factory in Rochelle Park, which is on the Bergen county side of the Passaic River, to cost $1,500,000. The buildings will be exclusively of brick. A large rubber concern is coming there from Boston. It has purchased 4,000 acres of ground and will erect mammoth factories. Transportation facilities are so much better than they are in Boston, where the firm is now located, that they have decided to move. The total building operations in Passaic, including dwellings, during the season thus far, has aggregated $2,500,000.

Without going into details it is perhaps sufficient to say that the boom in building operations in New Jersey, particularly that portion contiguous to New York, has only begun. Important manufacturing plants are discussing the question of moving into the suburbs and when the transportation facilities have been improved by the tunnels and other conveniences now in process of construction, the building boom, which has now begun, will develop with unprecedented swiftness. The only drawback now is the ferry service and the tunnels under Bergen Hill, which are the only means some of the railroads have of reaching the river. But with those tunnels done away with and with quick, unobstructed traffic across the North River, or under it, New Jersey will speedily become a paradise for brickmakers.

Newark, N. J., is preparing to do an immense amount of paving next season and will use brick for all streets where it makes a suitable surface. The brick paving already existing in Newark has satisfied users so well that there is no longer any difficulty in getting the Board of Works to adopt brick wherever practicable. The usefulness of the pavement, its long life and comparative cheapness, increase its popularity each year. There are few cities in the East better paved than Newark. And much of this excellence is due to the liberal area of brick now in use.

Fewer companies have been formed during the latter part of the season than were noted at the beginning. There have been some companies with a heavy capitalization organized during the past month, but the total number has been less. Brick companies frequently spring up like mushrooms in the East and disappear quite as quickly. Without sufficient capital to tide them over critical times, they are dissolved and forgotten. The organization of companies to manufacture granolithic, or concrete, seems to be quite the thing now, and more of them are reported than straight brick companies. It is conceivable that they will go the same way as some of the ephemeral brick companies. It is certain that a vast majority, probably nine in every ten, will never amount to anything. They are founded upon a supposition and the adversity which always comes to business enterprises in dull trade or other disturbances, will wipe them off the slate and they will be heard of no more. BURTON.

Mr. Frank W. De Wolf, of the United States Geological Survey, is engaged in making an examination of clay deposits of Southern Illinois for the Illinois Geological Survey.

Written for The Clay-Worker.

THE MAKING OF HEAT TEST CONES AT COLUMBUS, OHIO, AND OTHER MATTERS OF INTEREST TO CLAYWORKERS.

As READERS of The Clay-Worker have been told, Ohio ranks first as a clayworking state, and near the geographical center of the State is the capital, Columbus. In this city is located the Ohio State University, in which we have the School of Ceramics, which was the first of its kind in this country. Near the university is located the building as illustrated, and in which is established enterprises of interest to the clayworkers. These enterprises are the manufacture of cones, by Prof. Orton, Jr., the chemical laboratory of S. V. Peppel, chemical engineer, and the Richardson-Lovejoy Engineering Company.

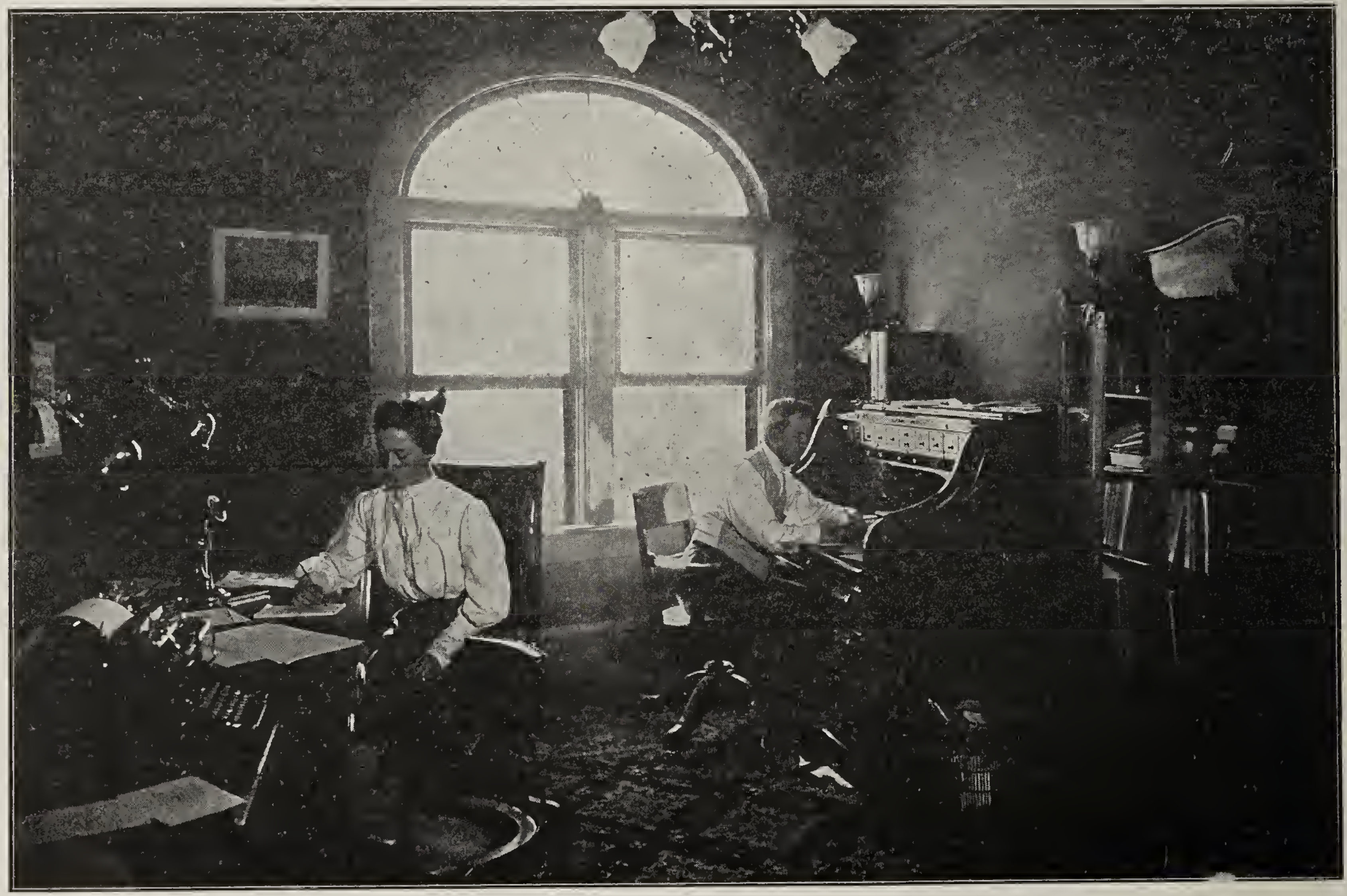
Prof. E. Orton, Jr., is too well known to the clayworking fraternity to need any introduction, but a brief description of the cone work may be of interest.

Only the purest clays, feldspars, flint, whiting, etc., are used in the manufacture of cones. When they come in, they are carefully sampled, analyzed and stored in bins for use. When a cone batch is desired, the materials are weighed out according to the formula for the cone. These are blended in a ball mill, dried and again blended, and finally sifted. Sample cones are made up from the material and tested against standard cones, and any variations are corrected by the addition of the proper ingredients. The testing is repeated until the sample cones check up perfectly with the standard cones. The material is then stored in bins, from which it is drawn for use. It is mixed with paste, and made up into cones in small hand machines, making three cones at a stroke. The cones are carefully dried and packed for shipment.

The standard cones have not been changed since the business was started and there is now on hand enough to last twenty or twenty-five years. From a few thousand cones the first year, the business has grown until now one and a half to two million cones are sent out every year, and they go not only to all parts of America, but into several foreign countries.

S. V. Peppel, whose laboratory is illustrated here, is a technical school graduate, making chemistry his special work. He was for some time in charge of the chemical work of the Ohio State School of Ceramics, under Prof. Orton, and subsequently undertook work for the Ohio Geological Survey, and is the author of the bulletins on the lime industries and the sand-lime brick of Ohio.

He later took charge of Rock Products and brought it up to the front rank it now occupies. As a chemist he ranks high, and his familiarity with ceramic products puts him in an excellent position to advise clayworkers in regard to the chemical properties of their materials. He not only can make the analysis, but he can tell the brickmaker what the analysis means, which is quite as important as the analysis itself.



Main Office of the Richardson-Lovejoy Engineering Company.

The Richardson-Lovejoy Engineering Company was incorporated since the last national convention of brickmakers, and this is its first year. The business was started by Mr. Richardson several years ago and had grown to such proportions that additional facilities were necessary, hence the incorporation of the business with W. D. Richardson and Ellis Lovejoy as the principal stockholders.

A new feature of the engineering business, and one which will be appreciated by clayworkers is the department of testing and controlling apparatus. The company has established a depot for all kinds of testing and controlling apparatus, and carries in stock a full line of such apparatus. They have excellent facilities for importing and are getting together foreign instruments which are not made in this country.

There is a well appointed machine shop, in which some apparatus is made, together with such special machinery as the company frequently designs. Molds and dies are also made a special feature of the company's work.

The engineering department has been enlarged. A fine drafting room connects directly with the general offices, and all drawings are under the direct supervision of the heads of the company.

Mr. Richardson and Mr. Lovejoy give their attention to the clayworking questions—geological work, mining, clay testing, designing plants, driers, kilns, etc. Mr. C. B. Harrop, the secretary of the company, a chemist and cement expert, and Prof. A. V. Bleininger, who is also a member of the company, are in charge of all cement problems. Prof. Bleininger is the author of the Ohio Geological Bulletin on the manufacture of cements. Mr. G. W. Holl, who is well known to the trade as the manager of the Specialty Machine Company, which the Engineering Company has absorbed, is in charge of all machine work.

The Home of Orton Cones, and the Richardson-Lovejoy Engineering Company.

Drafting Room, Richardson-Lovejoy Engineering Company.

Words of Praise for Clay-Worker.

Editor THE CLAY-WORKER:

Kindly discontinue our ad in your paper for dry cars and render statement. The cars have all been sold. We have nothing but words of praise for THE CLAY-WORKER as an advertising medium.

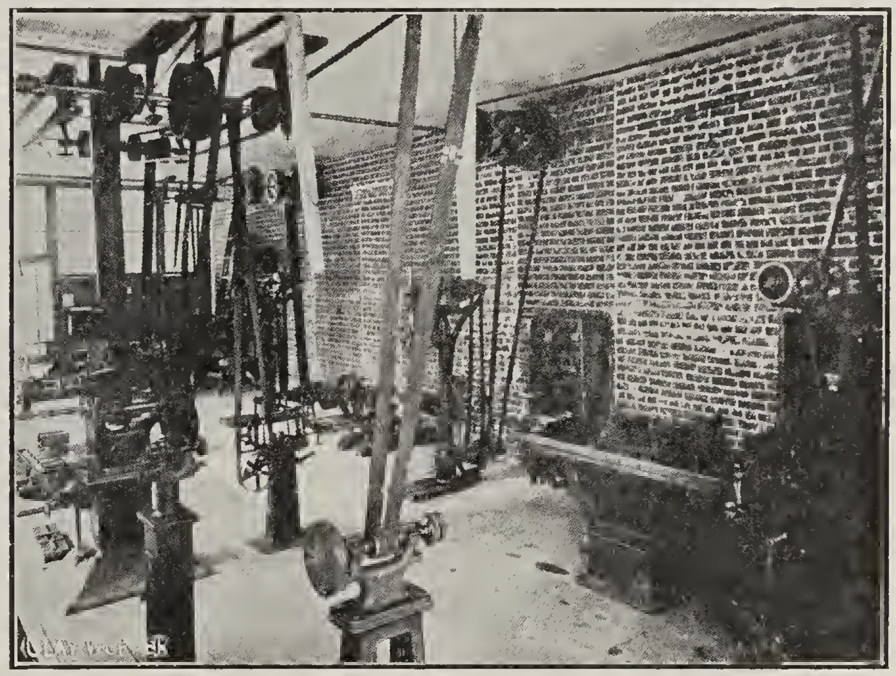
TULSA VITRIFIED BRICK CO.

NOVEL PLAN TO SECURE LABORERS FOR BRICKYARD.

Charlotte Brick Company Hits Upon Clever and Unique Scheme of Keeping Their Foreign Laborers in a Good Humor and Catching Others as They Pass—A Game of Flags.

The management of the Charlotte, N. C., Brick Company has hit upon a very unique scheme for getting foreign laborers for its plant near Fort Mill, S. C., and of keeping them in a good humor, says the Charlotte Observer. Several weeks ago the concern imported from New York about thirty immigrants, including several nationalities. These men were lodged in a row of houses between the brick plant and the Southern Railway, a house being given to the men of each nationality. With the idea of pleasing the men the management of the company a short while ago secured a flag of each nation represented and put it over the house in which the men of that nationality were quartered.

The flag scheme worked like a charm. It seemed to keep the men in a good humor. The Germans, lodged in the first house, took especial pride in the flag that floated over their abode. The Swedes eyed their banner with pride also, and even the Russians seemed pleased. Two or three Filipinos demanded that the Stars and Stripes be placed over their shack, and they were gratified.



Machine Shop of the Richardson-Lovejoy Engineering Company.

But the good humor of the men was not the only good result of the display of the flags. A few days after they had been released to the breeze, two German immigrants who were passing on the trains saw the colors of their country, got off the train at Fort Mill, went to see their brethren at the brick plant and are now at work there. One or two other immigrants have been caught the same way. "This is cheaper than paying transportation for them from New York," said a man connected with the company yesterday.

SAND-LIME BRICK MANUFACTURERS TO MEET IN CHICAGO.

H. O. Duerr, Wilmington, Del., secretary of the National Association of Manufacturers of Sand-Lime Products, has sent out the preliminary notice for the third annual convention of the Association which will be held in Chicago, Ill., December 5, 6 and 7. No announcement has been made as yet as to hotel headquarters, program, etc., but will be published in due time. Mr. Duerr states that a number of changes will be made in the Constitution and By-Laws of the organization, and he hopes for a large attendance.

Written for The Clay-Worker.

CLEVELAND BRICK NEWS.

Editor The Clay-Worker:

A meeting of the Executive Committee of the National Paving Brick Manufacturers' Association was held in Cleveland, September 6, at the Hollenden Hotel, for the regular quarterly conference. A score of the most prominent paving brick manufacturers in America were present at the gathering, at which the progress of the paving brick industry was discussed at length. The organization was formed a year ago last April, and is rapidly growing.

J. J. Brill, of Syracuse, N. Y., presented an application from New York State for membership in the Association. A similar petition was received from Pennsylvania. Both were accepted. William P. Blair, of Terre Haute, Ind., presided at the gathering and Spencer M. Duty, of Cleveland, acted as Secretary. Among those present were C. A. Turner, Sciotoville, O.; F. G. Matteson, Galesburg, Ill.; C. H. Doan, Columbus, O.; A. A. Reilly, Toledo, O.; J. W. Robb, Clinton, Ind.; W. W. Winslow, Indianapolis; Charles M. Crook, Youngstown, A.; C. C. Barr, Streator, Ill.; A. L. Curry, Minerva, O.; G. O. French, Malvern, O.; Charles M. Deckman, Cleveland; John Kline, Cleveland, and others. After the meeting the visitors were taken for a tally-ho ride over a number of miles of Cleveland's splendid brick streets and through the city parks.

Builders and Architects Viewing the Ruins of the Reinforced Concrete Building.

Paving brick manufacturers are greatly elated over the rising demand for their product in this section. The season opened at $10 per thousand and rose to $12. As high as $14 per thousand is now being paid for first-class paving brick in Ohio. The supply, the dealers say, will not meet the demand. Even a greater demand is expected next year.

One of Cleveland's largest brick plants was consumed by fire, Aug. 21. It was the property of George H. Gynn, and located on Harvard avenue. Fire was discovered on the roof of the main building by an employe shortly after 7 o'clock in the morning. In a few minutes the whole plant was enveloped in smoke and flames. From one frame building to another they rapidly spread until the entire plant was reduced to ruins. Machinery which had but recently been installed at a cost of several thousands of dollars was utterly wrecked. The loss is estimated by Mr. Gynn at $60,000. Only $1,000 in insurance was carried. The plant, which had a daily capacity of 60,000 brick, will probably be rebuilt at once. During the fire several firemen were overcome by heat and smoke, which were intense. The origin of the fire is unknown.

Reinforced Concrete Structure Collapses With Fatal Results.

Concrete construction received a crushing blow near Cleveland on Sept. 6, when a portion of a new concrete building being erected at Elyria, Ohio, collapsed, killing three men and injuring seven others. It was a wing of the new Garford Automobile Company's plant which caved in while the falsework was being removed from concrete pillars and beams, after having been poured in liquid form just fourteen days. Failure to set is attributed as a cause for the accident. The coroner at Elyria promises to put concrete construction on trial when he holds the inquests on the dead. The building was being erected by the Vinton Company, of Detroit. The cross beams which fell had a span of thirty feet and were constructed of wires surrounded by concrete. Cleveland builders say that even solid stone cut in one piece, the size of the beams, would fail to hold the weight set upon them. As a result of the accident concrete construction has received a decided setback in this city.

The demand for common brick remains as great as ever and building is in full swing. Notwithstanding that fact the price of brick remains unchanged and will continue to do so, say Barkwell & Bradley, the firm which handles the Cleveland output. Prices remain unchanged at $6.50 for soft and $7.00 for hard brick.

"We could have boosted our prices," says H. C. Bradley, "but we preferred to leave them the same and supply the demand as far as our brick would go. In other cities the price has been forced up and we could doubtless do the same thing here, but we won't."

Nearly all of the plants near this city are using natural gas now. While it is not much cheaper than coal, better results are obtained, as the bricks are more evenly colored. Then there is the matter of inconvenience of handling coal.

On the evening of September 8 a disastrous fire broke out in the brick plant of the Brookside Brick Company on Denison avenue and 2 Fifty-eighth street, injuring two employes and doing damage to the extent of $6,000. Natural gas is used in the plant and in some way it became ignited. Two men were badly burned and the firemen had the greatest difficulty in confining the flames to the frame boiler house. The office was saved and the damage materially reduced. No insurance was carried. Proprietors of the plant announce that it will be rebuilt within thirty days.

A comparatively new use for brick in this part of Ohio is seen in the purchase of many thousands for paving at railroad stations along the principal trunk lines. The brick is found to be much more durable than wood and is meeting with general favor for that use.

The Shield Brick, Sand & Clay Co., which purchased a number of acres of shale beds at Bedford, after being organized with a capital of $50,000, will not get down to manufacturing before next spring, though it was believed that the plant would be erected this fall. The concern will make a specialty of sand lime brick.

William Eggers, one of Cleveland's veteran sewer and brick contractors, died Aug. 20, after a lengthy illness. It is estimated by friends that Mr. Eggers built one-seventh of Cleveland's sewers. He was a resident of Cleveland for over thirty years, and a brother of F. H. Eggers, the brick manufacturer.

BUCKEYE.

Written for THE CLAY-WORKER.

POTTERY NEWS.

ALL OF THE potteries in this vicinity are as busy as can be and many are increasing the capacity of their plants in order to take care of their increasing business. The following notes will show what a few of the plants are doing.

A floor falling in the immense plant of the Homer Laughlin China Company in this city, did considerable damage some weeks ago, but was finally put back to place again without serious accident.

After January 1 the Homer Laughlin China Company will occupy the new pottery at Newell, W. Va., while the large plant at West End, Ohio, will be known as the Wells-Clarke China Company, being practically the same concern as the Homer Laughlin Company, except running under another name.

Gamble and Surles, of this city, have recently patented a new decorating kiln which will first be placed in operation at the new plant of the Homer Laughlin China Company at Newell, W. Va., opposite East Liverpool. The new kiln is a continuous kiln for firing decorated ware and is built in such a manner that the cars are kept in constant motion, the heat gradually increasing as the car enters into the heated part of the tunnel, and then growing less as it issues from it. The kiln will no doubt prove a great success.

The Knowles, Taylor & Knowles Co., of this city, is refitting its slip houses throughout with new filter presses of the round rail type.

The Dresden Pottery Company, of this city, has just placed in operation a new electric lighting plant. They are considering running the entire plant by electricity.

The R. Thomas & Sons Company, of this city, has just completed a new kiln which will be placed in operation at once. An addition has also just been completed to the plant.

A new addition is planned for the Electric Porcelain Company of this city. They manufacture electrical porcelain ware exclusively.

The C. F. Brunt Porcelain Company, of this city, has just completed a new addition to their electrical porcelain works here.

A new kiln has just been placed in operation at the plant of the Riverside Knob Works, manufacturers of clay door knobs.

The new works of the American Sewer Pipe Company, of this city, is fast nearing completion and from the present outlook, it will be placed in complete operation yet this year. The plant is entirely of steel and brick construction.

A new factory for the manufacture of pottery saggers is being talked of for this city and a company is now being organized to erect the plant. The Polk sagger machine will be used. This will make the fourth industry of the kind in the city.

The Globe Pottery at Crooksville, Ohio, which was burned down some months ago, has been rebuilt and will be ready to start operations anew within a short time.

The Hawthorne Pottery, at Hawthorne, Pa., has been rebuilt and will start up in full next week.

The Pfaltzgraff Stoneware Company, at York, Pa., which was destroyed by fire, has been rebuilt on another site and has started operations again.

The Star Encaustic Tile Company, of Pittsburg, Pa., has under consideration plans for a large addition.

The Rookwood Pottery at Cincinnati, Ohio, is about to erect an additional kiln and will start work at once on same.

The Roodhouse Pottery Company, at Roodhouse, Ill., has the brickwork completed for the new pottery there and will have the entire plant completed and in operation yet this year. Two large kilns will be erected at the outset.

The Wirt Manufacturing Company is erecting a four-kiln porcelain plant near Plymouth, Mass. Mr. Wirt was formerly connected with the General Electric Company of Schnectady, N. Y.

The offices of the Chattanooga Pottery Company have been removed from Syracuse, N. Y., to Chittenango, N. Y., the location of the factory.

The Limoges China Company, of Sebring, Ohio, is installing a new sifter in its semi-porcelain factory there. All of the potteries at Sebring are running steadily.

The Hartford Faience Company, of Hartford, Conn., is completing a new addition to their factory there. A new kiln has been added and additional machinery has also been installed. The plant is devoted to the manufacture of both electrical porcelain and faience ware.

The recently completed plant of the Pfaltzgraff Pottery Company, of York, Pa., has just been placed in operation. The company will make both stoneware and white granite ware.

A clayworking department is to be installed at the Mechanics' Institute and Manual Training School of Rochester, N. Y. Prof. Theodore Pond will be at the head of the department.

The United States Pottery, at Wellsville, Ohio, is putting a new slip pump in their slip house. The pottery has six kilns, and table and toilet ware is produced.

The Northwestern Terra Cotta Company, of Chicago, is considering some improvements to their plant.

A new clay-mining company is being organized at Atlantic City, N. J. They have bought up clay lands in South Carolina and will put in a railroad at once, and as soon as this is completed a plant will be erected. The railroad will be started immediately and the clay refining plant will be erected within the next year. The company will, it is said, be incorporated at once.

Some improvements are being made at the factory of the Excelsior Terra Cotta Company at Rocky Hill, N. J. Their office is located in New York.

The Kenilworth Brick Company's plant, of Congo, W. Va., has been rebuilt and the factory is almost ready to run. Mr. John Porter is at the head of the new company.

An addition for storing clay has just been built at the plant of the Locke Insulator Mfg. Company, of Victor, N. Y. The company only recently completed a large fireproof structure, which they are now occupying. The plant now has a capacity of twelve kilns.

A pottery will soon be erected at St. Joseph, Mo., by Mr. D. W. Cox. The plant will have, to start with, a capacity of two kilns.

Tom Potter.

East Liverpool, Ohio.

OBITUARY.

William Kettell, Tipton, Iowa.

William Kettell died at his home in Tipton, Iowa, August [illegible], in his seventy-fifth year. Mr. Kettell was one of the pioneers in the manufacture of brick and tile in Iowa, and founded the plant at Tipton, which is now operated by one of his sons, George H. Kettell, Mr. Kettell, senior, having retired from active management some thirteen years ago. He was very active in church work, having been a faithful member of the Presbyterian church since 1856. One daughter and three sons survive.

William Kettell.

Sudden Death of John Doyle at Utica.

John Doyle, proprietor of the Utica Brick Works, and one of the oldest citizens of Utica, N. Y., was stricken with heart failure while riding in his automobile August 21. He managed to turn off the brake and steer the machine toward the curb, but was dead by the time friends reached him.

Mr. Doyle was born in Ireland in 1845 and with his parents moved to Utica while a small boy. He learned the trade of bricklaying and then gradually drifted into the brick business; started the plant of the Utica Brick Company, nearly thirty years ago, which he had operated successfully continuously until the time of his death. He had been a member of the National Brick Manufacturers' Association for many years, was among the faithful attendants at the conventions, and his genial face will be missed by many who were accustomed to greet him from year to year. A local paper, in commenting on his death, says:

"Charity and willingness to help others were among Mr. Doyle's strongest characteristics. He was ever ready to assist those who were trying to establish themselves in business. In all his dealings honesty was his guiding star and it was truly said of him that his word was as good as a bond. He was of a modest, retiring disposition, but was genial and whole souled, and those who had his acquaintance prized it highly."

A widow and two daughters survive.

T. C. Booth, Perth Amboy, N. J.

Mr. T. C. Booth, chemist for the Perth Amboy Terra Cotta Company, died August 18. He was an associate member of the American Ceramic Society, attended the Philadelphia meeting, took active part in the discussions and was apparently in good health at that time. The A. C. S., through Prof. Edward Orton, secretary, expresses sorrow and a sense of loss in his untimely death, which will be felt by the members of the society generally.

THE GRATH PRESS GROWING IN POPULARITY.

"We were in competition with four different makes of brick presses in soliciting an order from the Mission Ridge (Tenn.) Clay Company," writes W. P. Grath, president of the Illinois Supply and Construction Company., St. Louis, "and our presses landed the order, as that company considered same to be years ahead in construction of any competing presses and to be the most modern and strongest press on the market today," and the manager of the Mission Ridge Clay Company, be it said, is no novice in the business; on the contrary, he has worn out a dry press of another make during the past season. As an evidence of the growing popularity of the Grath press, I submit the following letter from another experienced firm, namely:"

The MacDonell Brick and Cement Co.,
Jacksonville, Fla., August 15, 1906.

Mr. W. P. Grath, St. Louis, Missouri:

Dear Sir: It gives us pleasure to state that the three-mold press we bought of you has more than filled all your statements and guarantees, and is without a doubt the strongest press on the market. We gave it the most severe test and tried to break it, but it stood the racket and we gave up the idea of trying to break it. We found that it takes a very heavy pressure to make a good hard sand lime brick, and this is the third press that we have purchased before we found one that would give us the required pressure, and our brick are pronounced by all who see them to be the hardest brick they ever saw. In trying to make brick on the first two presses we broke them all up, so that they had to go to scrap pile, as we were determined to make good brick or none, and we are pleased to give your press credit for a large share of our success.

We are making twenty-four brick per minute and keep it up all day. This is more than some of our neighbors make on their four-mold presses. I was in a plant here yesterday and the superintendent said he wished their press was stronger, so they could give more pressure to their brick. I told him that it needed it badly. They use a Boyd four-mold, but their brick are so soft the men can hardly handle them. The ones we make on your press we can take up with two fingers in the middle of the brick, or any way we wish. I wish to say that I have visited fifteen or twenty sand-lime brick factories and I have never seen a brick as hard and that could be handled any old way as the brick we make on the press we bought of you, and I wish that all brickmakers had such presses, as when one fails it hurts all of us. Therefore it will give us pleasure to recommend your press as the strongest and most simple to operate and the best in our judgment.

Wishing the success you deserve with this press, we remain,

Yours very truly,
MacDonell Brick and Cement Co.,
G. W. Caufield, Manager.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Surprised by the Results of a For Sale Ad.

Editor THE CLAY-WORKER:

We beg to advise you that we are running an advertisement in your paper for sale of certain materials. We have sold the 20,000 feet of inch pipe mentioned therein, and we wish you would remove this one item from your next issue. We are very much pleased with THE CLAY-WORKER as an advertising medium, having sold through the little for sale ad. practically all of the machinery which we advertised on hand when we began wrecking this plant. We are much surprised at the results and presume we underestimated the value of advertisement in this technical journal.

PAUL W. WILLIAMS.

A Busy Canadian Brickmaker.

Editor THE CLAY-WORKER:

Your favor came to hand, but of course you do not look for a prompt reply at this time of the year from a brickmaker, and especially a Canadian, for we have to work night and day to keep our customers anywhere near satisfied. Business has been as good as we could ask for in every way. There has been a plant built at Mimico last season, but they are not doing much yet, manufacturing dry press entirely as far as I know. Outside of this I think additions to existing plants have been about the only changes, but most of these have increased and like ourselves, some of them treble their output.

JOHN B. MILLER.

Wants Sand for Use in Burning Brick.

Editor THE CLAY-WORKER:

Inclosed find $2.00 for one year's subscription to THE CLAY-WORKER.

Will you please give us the address of a firm which handles sand used in burning brick, tile or crockery. This sand, as we understand, is to protect the brick from running together. To explain more fully, we have a small dry pressed brick plant in Douglas. We have old-fashioned open kilns, but in the arches and over the arches our brick run together and we can scarcely break them apart. This sand we speak of, we believe, if sprinkled between brick when set, will prevent running together. Owing to high freight rates we would like to get it close home, say in Colorado.

Please give us as quick information as you can.

Douglas, Wyo. DOUGLAS CONSTRUCTION CO.

Brick and Building News of Northwestern Ohio.

Editor THE CLAY-WORKER:

Although Toledo is enjoying one of the most wonderful periods of building activity in its history, the brick business for August was quiet, even more so than for the same month a year ago. This is, however, explained by building operations beginning so early in the year, so that most of the big spring rush was over by mid-summer. While the month does not show up very well, this does not indicate that the year's business is in any way small. In fact, with the exception of one or two previous years, 1906 will close with a big record in the sale of brick.

The office of the City Building Inspector contains records of the past eight months that are well worth perusing. For the past eight months 952 permits have been issued, the total valuation of which reaches $3,511,718, thus showing an increase of 61 per cent over the same period of 1905. Indications point to the biggest building record in the history of the city.

August permits total 116, but the valuation is the largest of the year thus far, being $899,210. Then why should August be so quiet in the brick line? This is easily explained in two of the month's permits, including the Ohio building, an office and shop structure, and the Secor Hotel, both skyscraping steel structures, using very few brick as compared with the size of the buildings.

None of the local brick concerns have any reason to complain, and, in fact, none of them are complaining. Take the year as a whole thus far, the trade in brick has been very satisfactory. The mid-summer trade is always dull, and this season is no exception to the general rule, especially so in view of building operations beginning with the first of March, even before the frost is usually out of the ground.

September is expected to show a good delivery, both inside and outside of the city, although the fall trade has not gotten into full swing as yet.

All the local brick plants are running full blast with but one exception. They will continue to run until the frost period arrives, as very few of the yards have been enabled to stock up in view of the demands for this class of building material during the past eight months. Only two plants, that of the Findlay Hydraulic Press Brick Company and that of the Ohio Brick Company, which are equipped with Standard dryers for operating throughout the entire year, will continue operations. The Collingwood Brick Company, which will complete its new plant this winter, will also be listed among the city plants that will be run the entire year round, and which will be the most modern brick plant to be found in this section when completed.

The only paving contract let during the past few weeks was during the fore part of September, the City Council passing a resolution for the paving of Central avenue in front of the Pope Motor Car Company's plant.

Thus far Toledo brickmen have had very little trouble from the labor element, a scarcity of men being the usual difficulty that the different plants have been experiencing.

Prices for all kinds of brick have been very firm all season.

T. O. D.

Wants to Know Comparative Value of Coal and Oil.

Editor THE CLAY-WORKER:

I wish to ask a question through the columns of the CLAY-WORKER. Is there economy in using oil instead of coal, when the oil costs 3.10 per gallon and coal screenings cost $4.85 per ton? How would the arch brick compare with those where coal is used? I would use the oil in up-draft kilns with furnaces and coking tables. I would be very much pleased to receive answer by letters or have replies through your valuable publication.

A. C. OCHS.

Springfield, Minn.

A Record-Breaking Season in Canada.

Editor THE CLAY-WORKER:

I want to thank you for the new pocket list of members of the N. B. M. A. We have had a very busy season here, and have just caught up with our orders, and all the yards here are in the same shape. Our company delivered 3,678,000 brick in July and 4,158,000 in August, being the most brick we ever delivered in two months. Will close down our yards about the first of October, when we will have made 25,000,000 brick. The Winnipeg yards will turn out a total of about 45,000,000 brick this season, and will have only about 15,100,000 brick on hand at that time. The prospects for fall trade are exceptionally good.

At our plant we operate five machines making sand mold brick, and one machine turning out hollow brick and tile. The auger machine is a new venture here. We have had a good trade on our hollow blocks, and our customers tell us they are better than they ship from the States.

I missed the last convention, but I hope to be with you again this winter and renew old acquaintances. Wishing you and your good work every success, I am,

Yours truly, W. P. Alsip.

Winnipeg, Manitoba.

Written for The Clay-Worker.

BRICK AND BUILDING NEWS AT ST. LOUIS.

IT IS THE ALMOST unanimous opinion of realty operators who are in close touch with the plans of promoters and financiers that the tremendous impetus given to building operations in St. Louis at the opening of the present season will not subside until late in the fall. This indicates that the brick manufacturing industries will have more work on their hands than they have at the present time and will keep them busier than they are now. The adjustment of the labor troubles has made building operations move smoothly and the only trouble now existing is the scarcity of bricklayers. A well-informed brick manufacturer asserts that 500 more bricklayers could find ready and steady employment just at the present time.

For this reason Henry W. Kiel, secretary of the Master Bricklayers' Association, and Joseph L. Kolley, chairman of the executive committee of the Bricklayers' and Masons' Industrial Union, went over to Indianapolis, Ind., recently to confer with the president, vice-president and secretary of the International Union in Indianapolis, to obtain more bricklayers for St. Louis.

The structural interests of the city are suffering from a famine of mechanics of this class, as mentioned above. The tremendous amount of building going on at present has created a large demand for additional bricklayers and contractors are unable to find any solution of the difficulty.

While the scale is 65 cents an hour, most contractors are paying from 75 to 80 cents for bricklayers, the increase over the regular scale for eight hours amounting to nearly $2.

The question of whether it is possible to bring more bricklayers to the city by offering inducements or whether it is possible to secure them at any price on account of the tremendous building activity all over the United States, was discussed.

The brickyards are turning out all the brick that their capacity will permit and some of them are working overtime to supply the brick that they are called on to furnish.

The Building Commissioners' report for August shows that $377,470 more has been spent this year than during August, 1905, for building in St. Louis. The Building Commissioner says that the building operations are larger throughout the city than at any other period he can remember. The following table shows the difference between the number of permits issued and the amount of money put into new buildings during August this year, as compared with August last year:

	August, 1905.		August, 1906.	
Style.	Permits.	Total Cost.	Permits.	Total Cost.
Brick (new)	215	$1,164,061	311	$2,010,345
Additions	111	563,703	123	101,760
Frame (new)	426	119,739	431	104,609
Additions	75	8,927	83	17,186
Totals	827	$1,856,430	948	$2,233,900

Not alone do the figures show that a greater amount of money has been placed into buildings during August, but also that the quality of the structures has risen since last season, this year the greater gains being shown in new brick buildings.

The St. Louis Clay-Burning Company has given notice that there will be a meeting of the shareholders on October 1, for the purpose of voting on a proposition to diminish the capital stock of the company from $200,00 to $180,000.

Two more tracts of land in the clay belt between Clayton and Maplewood were transferred recently to the supposed representative of some clay burning company. The purchase price named for one was –14,000. The track contains twenty-nine acres. The other contains twenty-three acres and sold for $11,635. Engineers have begun to lay out a site for a large factory on one of the tracts of land. It is reported that the Evens and Howard Fire Brick Company was to build a large factory on the ground. George F. Jones, secretary of the Evens and Howard Company, would not verify or deny the report.

The work of the engineers indicates that the plant will be a large one. It is being constructed on land that is known to contain large deposits of fire clay of the finest quality. Several small tracts of land have been purchased in that district recently and the fact that the Terminal Railway Company is extending its tracks south to that point along the grade made several years ago, makes it certain that some sort of industry is to be established there.

Articles of incorporation were recently filed by the Mitchell Clay Manufacturing Company for $50,000. The stock is divided as follows: Mary E. Mitchell, 145 shares; John W. Gannett, 4 shares; L. F. Mitchell, 148 shares, and Stanislaus Mitchell, 203 shares. The company has been in existence for twenty-five years and has incorporated in order to enlarge the plant and increase the output. The concern deals in fire brick, drain tile and other clay products.

The Grafton Brick and Manufacturing Company, of Grafton, Ill., a few miles north of St. Louis, has been incorporated with a capital stock of $100,000. The incorporators are Ernest Meysenberg, William H. Journey and R. H. Murphey.

Ernest E. Holmes, 10 years old, fell into one of the clay pits of the Hydraulic Press Brick Company, at Malcolm Station, on the Creve Coeur branch of the Missouri Pacific Railway, near St. Louis, a few days ago, and was killed.

Word has been received here that the Moberly Brick and Tiling Company has sold its plant to the Metropolitan Brick Company, of Canton, Ohio. The deal was closed a few days ago. John B. Jennings, of Moberly, is the new president and J. G. Barbour, of Canton, secretary. A Saint.

St. Louis, Mo.

CHARLES BECHTEL FORMS A NEW PARTNERSHIP.

Chas. H. Bechtel.

The wedding of Charles H. Bechtel, the junior member of Bechtels, Waterloo. Ont., Canada, and Miss Mabel Cherry, of Galt, Ont., occurred at Trinity Church, Galt, Ont., September 12. The best man was Peter B. Gibson, secretary of the Scott Manufacturing Company, who traveled all the way from St. Louis to see that the event was properly solemnized. On their return from an extended wedding trip, the happy couple will go to housekeeping in a new home of red pressed brick at Waterloo. The Clay-Worker extends congratulations and to quote Mr. Gibson, "hopes that Bechtel's system of managing a home will prove as efficient and successful as has Bechtel's system of hacking and trucking brick."

Written for The Clay-Worker.

THE CHICAGO SITUATION.

RECORDS of local building activity thus far this month give every indication that September, 1906, is going to hold its own with September of a year ago, and help keep up the record of the rest of the present year, which fell badly behind in August.

Perhaps it is just as well on the whole that business was a bit slack last month, for it was hotter than the hinges of His Satanic Majesty's palace gate, and the atmosphere was so humid and oppressive that nobody felt like working anyhow, except "Dick" Kimbell, of the Chicago Hydraulic Press Brick Company—and everybody knows that you couldn't seperate him and work with a crowbar.

The only people connected with the building material trade who were not affected by the heat and the falling off in business were the brick machinery men and Building Commissioner Bartzen. Bartzen, all the architects and contractors will admit, is a wonder. There hasn't been anything like him connected with a city administration and in charge of the building department in the memory of the oldest inhabitant.

Thus far none of the first-class architects have made any open complaint about his work, and the general impression is that he stands for the best interests of the building trade. He has just promulgated a rule which will put the high-class, painstaking architect in a strong position and place a premium upon thoroughness. Heretofore it has been the custom where plans were brought in, not up to the standards of the building ordinances, for the building inspectors and clerks to nurse them along with the architect and show him just where he failed, and even aid him in remedying the defects of his plans. In those days the force of the building department did not pretend to do the work it tries to do now and was always behind. Now, if a plan comes in that violates the building law it is not tolerated nor fussed with. "Raus mit him" is the chorus, lead by the sturdy German commissioner when such a plan appears.

"We haven't time to have anything to do mit dose," says Bartzen. "It is the business of every architect to know the building laws, and the city doesn't pay us to do their work."

Prices on building material rule about as they have during the summer. There appears to be little change in the common brick situation. An effort was made within the past few days to put a new cement brick on the market. The brick is manufactured in Michigan City. It is hard and if used would come in between a common and a front brick. It would be used about where a common brick would be needed, but would put up a better appearance, and has been suggested as suitable material for small cottages and dwellings, such as are frequently erected in manufacturing communities. A price of about $12 is suggested. Bonner, Marshall & Co. have been asked to handle the product.

While the year has been remarkably good for the brickmaker, it has also been remarkably good for the man without whom the brickmaker would be back on an equal footing with the Egyptian friends of the Hebrew leader, Moses, namely, the maker of brick machinery. President Flood, of Chisolm, Boyd & White Co., says that this year has been ahead of last, and the last year was a corker. From January 1 to August 31, this company shipped from its plant on the South Side, thirty-one brick presses. Ten of these were shipped in one month alone, a record for a single month's shipments of machinery, according to Mr. Flood. Half of these orders included complete equipment. One complete plant of 40,000 capacity, including two four-mold Boyd presses, clay crushing and screening machinery, machinery for transmission and power was sent to Vladivostock, Siberia.

T. N. Horsely, of Christ Church, New Zealand, has ordered another Boyd press. This makes the fourth press he has ordered since starting to use them. The company reports a good run on its special sandlime presses. All in all, business has been so good that it has been necessary to add to its equipment in the way of new, up-to-date tools and machinery.

SCRIP.

Written for THE CLAY-WORKER.

PACIFIC COAST NEWS.

THE GOOD start made in reconstruction work in San Francisco in July was continued throughout August. During the latter month ninety building permits for brick buildings were taken out, to be erected at a total estimated cost of $1,658,000. This shows a gain in brick construction work undertaken during the month as compared with the month preceding, of almost $400,000. This included, beside a large amount of smaller brick buildings, ranging in cost from $10,000 down, several large buildings to be erected at an estimated cost of $100,000 and more. Builders report that while there is naturally an upward tendency in prices of materials and labor, owing to the extraordinary demand, the difficulties are not greater than might have been expected. Altogether work is proceeding in a very satisfactory manner. Supplies of materials are coming in more freely and at the present time there is no actual scarcity in any line. Laborers are receiving high prices, but the number seeking employment is rapidly increasing and at present there is no fear of strikes in the building trades.

The strike of street car men which has tied up practically all of the city street car lines and seriously interfered with many lines of trade during the past two weeks, has apparently had no effect either on building or on the cleaning up of the debris throughout the burned district. During the month repair work has been going on rapidly and during the past few days some of the largest repair contracts ever let in the city have been recorded. Mahoney Bros. have secured a contract amounting to $400,000 for the repairing of the Crocker Building at the corner of Market and Post streets. The same firm has also contracted to repair the Shreve Building, at the northwest corner of Grant avenue and Post street, at a cost of $200,000, and the Mutual Savings Bank Building on Market and Geary streets, at a cost of $125,000. A contract has also been let for the repairing of the Grant Building, at the corner of Market and Seventh streets, at a cost of $75,000. The tearing down and removal of some of the larger ruins, such as the Palace Hotel and the St. Ignatius Church ruins, are progressing rapidly. On the latter job there are now employed fifty-eight two-horse teams, 150 shovelers, 57 brick cleaners, not to speak of donkey engines and other accessories.

Among the larger brick structures which are to be erected in San Francisco in the immediate future are the Levison Block, on Sutter street, near Kearney, which will be a steel frame, glazed brick and terra cotta building, to cost approximately $150,000; the Rosenbaum Building, on the southwest corner of Pine and Kearney streets, a four-story brick and terra cotta building, to cost $30,000; the four-story Kahn Building, on the northwest corner of Second and Felsom streets, to cost $50,000; the new Hale Bros. Building, on Market, near Sixth, to cost $250,000; the McCreery Building, a brick and stone structure at the corner of Pine and Montgomery streets, to cost $40,000; the Trades Council Temple, a three-story pressed brick building, at the corner of Guerrero and Fourteenth streets, to cost $70,000; the Redmen's Building, at 220 Golden Gate avenue, to cost $60,000, and the six-story Schoenberg Building at the northwest corner of Stevenson and First streets, to cost $60,000.

On September 4 the citizens of Oakland, Cal., decided at a special election in favor of issuing bonds to the amount of $588,500 for the reconstruction and extending of the city's sewer system and to provide for storm water and sanitary conduits and the building of outlets to carry all refuse to deep water.

The Board of Supervisors of San Francisco has appropriated $100,00 for sewer construction work on the lower portion of Market street, where the sewer system was damaged by the earthquake. A similar amount was also appropriated for the construction of the East Potero intercepting sewer, and $100,000 for street work on lower Market street.

The Port Costa Brick Works of Port Costa, Cal., is preparing to remove its headquarters from Port Costa to San Francisco.

The Los Angeles Pressed Brick Company has secured the ground formerly occupied by the Remillard Brick Company at Point Richmond, Cal., and will put in a large manufacturing plant to be used in turning out brick for the rebuilding of San Francisco. A. Chamberlain, who is to be superintendent of the plant, reports that something like forty cars of machinery, picks, shovels, scrapers and plows are now on the way.

The unusual rains in New Mexico and Arizona last week did considerable damage to brickyards in various towns in the territory, owing to the fact that the brick men were unprepared for the storm. The Benson Brick Company at Benson, Ariz., was a heavy loser.

Joseph Simons, president of the Simons Brick Company, of Los Angeles, reports that the present state of the building law in that city is dangerous, not only to the welfare of the brick interests, but to the welfare of the city at large. He claims that as there is no ordinance controlling the construction of reinforced concrete buildings, these are now being erected with walls about one-third as thick as they should be. He points to the fact that the walls and floors of the Laughlin Building Annex used as a public library began to crack about five months ago and are now in a serious condition, as showing the evil of the present situation.

The Tongue Pressed Brick, Tile and Improvement Company has been incorporated at Raton, N. M., for the purpose of putting in a pressed brick plant at that place.

The Berg and Oxby Brick Company has been incorporated at Los Angeles, Cal., with a capital stock of $75,000, of which

$50,000 has been subscribed. The principal stockholders are W. C. Petchner, C. G. Berg and J. Berg.

The Cia Manufacturena de Ladrillos Arniscos, S. A., has been incorporated at the City of Mexico with a capital stock of $150,0000. The company will erect a sand-lime brick plant within the city limits of Torreon, with a daily capacity of 34,000 bricks.

The firm of Gladding, McBean & Co. has acquired a site in Oakland, Cal., for its business. A lot 60x100 feet at the corner of Grove and Twenty-first street has been purchased fora $10,000.

The San Luis Brick Company of San Luis Obispo, Cal., has been awarded the contract for 2,000,000 brick for the large plant of the California Petroleum Refineries, Limited, at Oilport.

About thirty moulders, patternmakers and laborers employed at the East First street yards of the California Ornamental Brick Company of Los Angeles, Cal., have gone on a strike. They demand an eight, instead of a nine-hour day, and wages heretofore paid. The movement is confined to the plant only.

The Palouse Pottery Manufacturing Company, of Palouse, Wash., has installed machinery for the manufacturing of tile, brick, sewer pipe, drain tile and roofing tile.

San Francisco, Sept. 5, 1906. SUNSET.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.

THE MONTH OF AUGUST has been quite a dull one in building operations in Kansas City. There has been few buildings started, most of the work being on buildings already in course of construction. A summary of the permits issued for the month by the superintendent of buildings shows a falling off, as compared with the same month of last year, of $213,375. The total number of permits issued was 336, and the total value, $811,640, of which 44 were of brick, and the value $371,900. The month of September is expected to make a good deal better showing in the building line. People who have been away for the summer are coming home, and buildings which have been hanging fire on account of the absence of some of the people interested are now expected to be started.

Some are inclined to think that we are going to have a quiet season in building soon, owing to the fact that there has been so much building of late, and the price of all kinds of building material is so high. Others feel that the people will continue to demand the newer and more modern houses and business buildings, and as a result there will be a big demand for new buildings for a long time yet.

Brick manufacturers are now getting a little share of the general advance in the price of building material. The brick men seem to have been the last to get backbone enough to boost their prices, and as a result they have been making a little more money than in the past. In past years there has been a scramble for orders, and as a result the prices were trimmed, but the demand for brick seems to be so general this year that the manufacturers do not have to scramble for business, and the flood of orders has made them feel a little more independent.

The Kansas gas-burned brick seem to be finding a market in all directions, and as a result a good many less of them are coming to Kansas City than ever before. Kansas City being the dumping ground for this brick, they naturally expect to sell for less here, and other points get the preference on account of the higher prices. At this time, most of the brick being furnished here comes from the local plants, and the price for common brick remains $7.00 to $7.50, delivered on the job.

One thing which will make builders think a good while before turning from brick as a building material is the fact that it is a material which would be very hard to control by a trust, owing to the fact that a plant can be started with a comparatively small capital, while it will be an easy matter to contol the cement industry, owing to the large capital required. This will probably be a point which will be brought to the attention of many builders in the future, as the sentiment against trusts has become so pronounced that a bidder in opposition to a trust is pretty sure to call attention to the fact that his opponent is in that class.

The Stukenberg Pressed Brick Company has been succeeded in business in this city by the Kempff Shale Brick Company.

Theodore C. Jacoby, who has been with the Kansas City Hydraulic Pressed Brick Company for the past seventeen years, and is now only twenty-nine years of age, will probably be one of the youngest candidates for the State Legislature this year. His candidacy has been endorsed by the regular Republican organization.

The brickyard of Flanagan Bros. Manufacturing Company was severely damaged by the recent heavy rain. We had the heaviest rain in the history of the city, in the same length of time, there being a rainfall of six inches in three hours. The result was the flooding of thousands of basements, and general damage wherever such a flood of water could cause damage. Several of the kilns of the Flanagan Bros. caved in, and the railroad tracks in their yards were all undermined.

William Howe, a representative of the American Asphaltum and Rubber Company, of Chicago, who was in this city recently, said: "Vitrified brick pavement, with a cushion of asphaltum over it, will be the coming pavement for city streets. The interstices between the bricks being asphaltum, gives every brick its own expansion joint to prevent working. It also provides a soft adhesive cushion for horses or vehicles." K. A. W.

CLAY BLANKET FOR RIVER BED.

English Tunnel Contractors Plan Engineering Feat to Prevent Frequent "Blowouts."

To blanket the East River with four strips of clay fifty feet wide and several feet deep, clear across from the foot of Thirty-fourth street, Manhattan, to the shore front in Long Island City, is an engineering feat about ready to be put in operation by Pearson & Son, the English contractors, who are driving the four bores of the Pennsylvania Railroad tunnel which is to connect Manhattan and Queens.

This proposed blanket of clay is to be laid directly along the route mapped out for the borings. For months the contractors have had trouble with leakages in their tunnel borings in the East River close to the Manhattan shore, where the troubled waters boil and spout from the force of the compressed air which works its way through the soft mud bed of the river. Tons of clay have been dumped in over this particular spot for the purpose of shutting off the leaks. It is with a view to preventing other "blowouts" in the tunnel work that this extra roofing, as it were, is to be spread over the bottom of the river. The engineers also report that they are making satisfactory progress.—Brooklyn Eagle.

QUALITY IN MORTAR COLORS.

In this advanced age all manufacturers must keep pace or run behind. This is particularly so in "mortar colors." The time is almost gone by when an up-to-date architect will be hoodwinked into using inferior mortar colors, thereby ruining the general effect of what would otherwise be a beautiful structure. The Ricketson Mineral Paint Works, Milwaukee, Wis., have the lead in quality, and that's the reason they have the choice and pick of the trade, they say. They continue in their efforts to produce the best mortar, brick or stone coloring, and claim that all cheap colors are numbered "23."

The Piedmont Brick Company, of Lowell, N. C., has put in a 40,000 daily capacity plant of J. C. Steele & Sons' machinery, including No. 4 machine, pug mill, disintegrator and granulator.

The Financial and Commercial Co-Operative Company, of Ft. Gaines, Ga., has purchased an outfit of brickmaking machinery from J. C. Steele & Sons, Statesville, N. C., consisting of No. 4 brick machine, pug mill, disintegrator, granulator, etc.

ENDURING BRICK.

Superiority Claimed for the Ancient Building Material.

UNDER the above heading there is an interesting addition to current literature on brick, by Mr. Albert A. Gery, of the United States Brick Company, Reading, Pa. It was written to and published in the New York Sun of August 18, in reply to an editorial entitled "Falling Brick," which the Sun published August 5, and which Mr. Gery states, while intending to be scientific in its nature, was a conclusion drawn from wrong premises. The editorial begins by commenting upon the recent drop in the price of brick in New York City, coupled with the prediction that it will not rise again, and then deplores the consequent depreciation in the value of all brick buildings as a public calamity. Mr. Gery's reply to the editorial states that nothing has happened but the scotching of another trust, which he considers a public boon.

"Let us note at the threshold," he continues, "that the brick walls of a building are the least expensive part of it, all the bricks laid in place amounting to less than an average of 10 per cent. of its cost. A rise or fall in the price of brick, therefore, is so inconsiderable an item that its influence in encouraging or retarding building is insensible.

"The price of brick in New York for the last six months has been abnormally high as the result of a mischievous combination of brick manufacturers on the Hudson River, the increased price in due course stimulating the output and breaking the combination, to the general public relief.

"Brick is the least variable in price of all commodities, because the prime condition of raw material is not a factor. With inexhaustible supplies of shale and clay and constant and unlimited markets, there are no elements involved but labor and fuel, and the modern method by which the bricks are handled and heated but once instead of twice or thrice, has reduced the cost to such an extent that there is no chance of a substitute for this enduring, convenient and economical commodity, which neither moth nor rust can corrupt, and which is insensible to the ravages of fire and time. Bricks have stood the test of ages. The history of Babylon and Nineveh, inscribed upon their faces thousands of years ago, are as legible today as when the text was written. The old Roman walls of Vienna, discovered in recent excavations, disclose the bricks in perfect condition, while the cement in which they were laid has crumbled into dust.

"Making bricks is the oldest of all the industries, and the bricks made for the Tower of Babel were produced by the same crude methods as those now in use on the Hudson River. It is the one undeveloped industry of modern times, and offers the greatest opportunity and inducement for genius and capital. The present price is good enough for modern plants with a product greatly superior in quality to that of the antique yards that now supply your market.

"The purpose of the article referred to was not so much apparently to depreciate brick as to commend cement, which it declares is displacing brick all over the country. This statement is so gross an error that The Sun will not be willing to stand sponsor for it after even a slight investigation. The substitution of poured cement is entirely experimental, and the extent of its use does not make the slightest impression upon the brick market. According to the statistics of the United States Geological Survey, the value of clay products stands third among the natural industries of the country, amounting to $120,000.000 a year, being exceeded by coal and iron alone, and exceeding in value all the gold, silver, copper and petroleum together. The value of cement has not been proved as a building material, and it has not been shown that it will endure the vibrations to which the walls of town houses are constantly subjected. The San Francisco buildings which sustained the temporary shock of an earthquake were sustained by the iron frames, and not by the cement which covered them. The National Builder says on this subject:

"'It is a mistake to suppose that concrete made with Portland or any other cement is absolutely a safe material to build every sort of work with, or that as now employed it is a perfect fireproof substance. There have been a number of serious failures of concrete construction, commencing with the fall of three floors of the Hotel Oswego, which fell last October; a warehouse in Pittsburg, belonging to Kaufman Brothers; the Wonderland Theater of Detroit; the Bell Telephone Company's building in Philadelphia; the Paddington apartment building, Chicago; the Conservatory apartment, Boston; the Johnson Service Company's building, Milwaukee, and the Lawrence Savings Bank of Newcastle, Pa. These are only a few of the failures, the most prominent. We could name a number of others of more or less magnitude. It is not likely these failures are simply because of the concrete being insufficient. More probably the faults lay with the methods, both of using the material and the mode of construction. As a fireproofing material concrete may be all right, but the many failures in which this material has been depended upon throws suspicion on its efficiency. Perhaps the failures are due to bad methods, careless workmanship or insufficient inspection, or all of these combined.'

"There is this thing that must be taken into account with concrete construction: Cement making is a delicate process, and even in the most carefully managed factories it is impossible at all times to secure absolute uniformity in the product. Of course there are constant tests at the factory, for the makers of a recognized brand realize how essential it is to keep their product up to the highest standard. Cement deteriorates rapidly under certain conditions, and new and untried brands are constantly coming into the market. The engineers of a great work have their own tests, which they regularly apply to the cement they use, and so they protect themselves. With the ordinary job there are no facilities for testing, and the cement is used without question as it is delivered. Sometimes a batch of bad cement will find its way into a job. Upon this weak and slack material may be erected a massive superstructure that will collapse with appalling disaster. Then it will be found necessary to go into the entire question of concrete construction, and put it under stringent regulation. In our craze for novel methods we seem to forget that concrete is not like stone or brick masonry in having the test and approval of the centuries."

VALUABLE SHALE AND LIMESTONE DEPOSITS IN WESTERN ILLINOIS.

The investigation of the clays and limestone deposits of Western Illinois, made by the Illinois State Geological Survey, under the direction of H. Foster Bain has proven that there are exceptionally rich deposits of cement making materials in that section. Dr. J. Eaton Johnson, Secretary of the Warsaw (Ill.) Improvement Association is very much elated over the showing. He will be pleased to submit an analysis of the material to any reader of The Clay-Worker who may care to consider establishing a cement plant or clay manufactory there. The locality offers many advantages for enterprises of this sort.

Wants Bids on New Brick Plant.

Editor The Clay-Worker:

We now have plans and specifications ready for our large brick plant, to be built at Greendale, Hocking county, Ohio, and are soliciting bids from contractors who are in position to figure on erecting the buildings. There will be a large central power station and machine shop, one large factory building, one dryer, two fan houses, six rectangular kilns, one continuous kiln, two stock sheds and numerous small buildings for the employes, to be erected.

The Columbus & Hocking Clay Construction Co.
Columbus, Ohio.

The Chatahoochee Valley Brick Company, of Omaha, Ga., has increased its capacity by installing a new Steele No. 5 brick machine.

The E. A. Poe Brick Company, of Fayetteville, N. C., has installed another of J. C. Steele & Sons' No. 4 machines, an exact duplicate of the one purchased from that firm last year. Mr. Poe is operating both of these machines at his plant near Fayetteville.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as Second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-THIRD YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

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Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

227-233 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

VOL. XLVI. SEPTEMBER, 1906. No. 3.

CURRENT COMMENT.

The cotton fields look so good to the Southern laborer these days that the other industries down there suffer seriously for lack of help.

* * *

Simplified spelling may do in America, but if it ever strikes Russia, or even Germany, and gets mixed up with some of their proper names, there'll be something drop.

* * *

There may be a few melancholy thoughts for the brick man who has let haste make waste and imperfect work, but as a rule the trade is too busy for such thoughts, even if the season does call for them.

* * *

It seems that at last we've got railway rate regulations that "do regulate," but whether the regulation will be entirely to the satisfaction of all concerned remains to be seen. If that should prove true it will be the first thing that ever pleased everybody at once.

* * *

We may scold the Russian Government because it has forgotten how to govern wisely, but the gravest fault of all has been in permitting its people to forget how to be governed. The wisest kind of a government, if given a lot of people that have lost the art of being governed, is up against a hard proposition that it will take years and fresh generations to solve.

* * *

When the big financiers, the "authorities" on financial matters that we have been in a habit of looking up to with something like awe, make a mess of things, bringing wreck and ruin, it is about time to ask where we shall turn for a guiding light in things financial, and to think more kindly of the stupidity of our grandfathers who used socks as a receiving bank for surplus cash.

* * *

This is the time of year that we are reminded that the greatest factor in progress comes from education, and the greatest of all our institutions are the free public schools.

* * *

A senator has said that society, meaning evidently the great general public, can under our form of government get just what it wants. Well, if what we have been getting is any measure of what our true wants have been, there is a lot of us that have not only been fooling each other, but we have been fooling ourselves, for surely society won't confess to having wanted the things our muck rakers have been stirring up.

* * *

When they can't have yellow fever in our sister republics on the south, they stir up a revolution. In other words, it looks like they must have something the matter with them to feel natural. That's the way it is with some people, even in our own country; it just seems like they can't get along without trouble of some kind, and yet they complain of the very trouble that seems to give them so much satisfaction. Verily, this is a world of complications and it is a smart man that is able to realize just when he is well off.

THE REFINEMENT OF GOOD HOMES.

It is refreshing these days to turn from the contemplation of corruption in high places that has been exposed until it has become nauseating, and view the progress being made by the great common people as exemplified in the building of better and more aesthetic homes. The home is the true gauge of progress, that is, the home building of the people, and today we can see on all sides men building better homes than they probably ever dreamed of a few years ago, and with the substance of prosperity being put to this good use we not only have the best assurance in the world of the safety of our future welfare, but also the true sign of refinement and broad education. Let us look on this picture and encourage it for awhile as a measure of relief from the morbid thoughts begotten by weakness in high places—let a little praise singing for the right take the place of faultfinding for the wrong, and we will all soon begin to feel better—and be better for it.

CONCRETE COMPETITION.

Undoubtedly the brick trade is more frightened than hurt by the competition of concrete, whether reinforced or plain. There is a tremendous hue and cry raised in some localities regarding this new building material. Its cheapness is dwelt upon and its durability is sung until there seems to be nothing more to be said, but all these features of the business do not make the stuff one whit stronger or better for the building of permanent structures.

The usefulness of cement or concrete ends with rough and coarse work. It cannot be successfully utilized in the construction of buildings where any degree of elegance or attractiveness is wanted. And herein lies the opportunity of the brick manufacturer. The brick structure must be elegant. It must appear attractive. It is the nature of the material to make it so, consequently cement or concrete can never compete with it in any considerable degree. For whatever individuals or companies may say there are few buildings constructed which do not have some claim to beauty. And beauty can never be coaxed from cement or concrete.

The question of superior durability under sudden stresses of one sort or another has been determined by the recent earthquake in San Francisco, and in numerous fires where concrete has dissolved as though made of the weakest material procurable. Durability is no longer relied upon to support the manufacturers' claims of superiority, as compared with brick. The main point discussed now is cheapness, and cheapness has never yet developed anything of importance. The main points in any building material should be strength, usefulness and beauty. With these three features as prominently developed as they are in brick, the matter of competition with cement or concrete need not worry any maker. In the end that material will win which has the most of all three of these qualities, and that means burned clay.

PROSPERITY.

No manufacturer need feel as though the present active market will end with this season. The look ahead indicates that the coming year will be quite as good and there is every reason to believe that it will be better. The wave of prosperity through which the country is now passing is substantial. It is not built upon credit. On the contrary it is based upon the fact that all crops are bountiful, that all business enterprises have been long employed in profitable undertakings and that there is a real reason for the present satisfactory conditions.

The East is prosperous because its mills are all in operation and its operatives are receiving high wages. The West is prosperous because it has abundant crops and the working people are able to purchase freely of what they want. The South is prosperous because the cotton crop is larger than it was last year and is worth more per pound, and her industrial interests are flourishing. Such a combination was never known before, and the result is reflected in every industry in the country. The prospect is the most promising ever known in America.

Plans for next season's work can be upon the same liberal scale as heretofore. There will be no reduction in the volume of prosperity next season. In fact it looks now as though it would increase. If this is true, and there is every reason to think it is, next year's business will surpass that which has been done during the past two seasons. The brickmaker's harvest has only begun.

MAKING "COPY" OUT OF BRICK PRICES.

Every once in awhile, when other excitement dulls, the daily newspapers of the country dig into things technical and scientific for a change, and generally when they do they make copy out of this with the same lack of deliberation that characterizes the life of the daily fight against time and of the kind that gets out 2 o'clock editions at high noon, and the funny thing of it is, they seem to regard their sayings, or want the people to regard them, as the Gospel truth, and as having weight in proportion to the bulkiness of the Sunday newspaper. Naturally, in making these rounds of technical things they get on the subject of brick once in awhile, and recently the New York Sun has been making copy out of brick prices, and here is the way the editorial writer of that paper starts into the subject:

> "A critical situation has arisen in the building industry, owing to a sudden fall in the price of brick. Since last May the cost of that important structural material has gone down about 50 per cent. The decline, if permanent, must affect the value of the great majority of the buildings, old and new, in this town. It is likely, however, to be especially disastrous in the case of apartment houses.
>
> "For several years an extensive speculation in old apartment houses has been maintained on the ground that their value has advanced in proportion to the advance in the cost of labor and materials. Meanwhile apartment houses have been erected in unprecedented numbers. During the last eighteen months plans have been filed in the various boroughs for new apartment buildings with a total estimated housing capacity of 527,000 persons. There is at present a big oversupply of such dwellings and rents have consequently begun to decline. Even without any marked recession in the cost of construction the position in which owners of apartment houses find themselves is therefore by no means reassuring. The slump in the price of brick will, unless purely temporary, result in a depreciation of at least $1,500 in the average cheap apartment building."

Wouldn't that make a soft brick turn hard? Gee whiz! the trade has been for years and years striving to make the best product at the lowest cost possible, so that the people could enhance the value of their homes and the real estate in general by building better houses without having to add excessive cost. Now, if the Sun wants to promote and protect the interest of the builder, the thing it should do is turn its searchlight on the conditions that are, and might be, and see if it can discover some way to reduce the cost of bricklaying. Then it will be doing a real service for the country by cutting out a big item in the cost of construction and make it easier to build the best houses in the world without danger of getting the cost out of reach or injuring the real value of property. In fact, as was pointed out by Albert A. Gery, of the United States Brick Company, Reading, Pa., in a letter addressed to the Sun on this subject, which we print in another column and in reply to the editorial, the cost of brick itself is really, and always has been, a comparatively small item in the ultimate cost of building.

But, further along in the editorial referred to, the real purpose of the thing develops, which is the exploitation of concrete to take the place of brick in structural work. On this point we protest that the manner of going at it and the methods employed are about the limit. It's the first time we have ever heard of the cheapness of brick being used as an "argument" in favor of concrete, and that is what they make out of it here by warping it around in an absurd way. Probably the editor did it innocently, and may be he really thought he had discovered something, but any way, it gives us something new, for we thought that practically all the "arguments" it was possible to dig up had been used by promoters of concrete and have been met in due time and shown to not hold water as compared to brick, but now they have strained a point and shown the limit by twisting the cheapness of brick around into a would-be boost for concrete. The editor says that after the San Francisco fire the new city out there is being constructed of concrete and so far no orders for brick have been placed in New York for delivery at the Golden Gate. Evidently the editor presumes that if any brick were bought for San Francisco they should be purchased in New York, or at least New York would get a part of the trade. That is the fault that some New Yorkers have, thinking that the whole world, with the exception of a few subscribers and some antiquated royalty across the waters, is centered within the boundaries of New York. Further along the editorial innocently admits that concrete has only been used sparingly in New York for construction work, and then qualifies this by saying that as its virtues have been demonstrated since the San Francisco fire, local builders are turning more extensively to its use.

There is room for daily newspapers, such as the Sun, to do lots of good for the country and themselves, too, by a proper treatment of subjects pertaining to the best methods of construction, and we are always glad to see them get into the game and help promote good ideas, but we protest that a subject of this kind can't be handled by even the best of writers without due deliberation, and when they are subject to the mercy of writers who are apparently not informed at all on the point of technical subjects in hand, there is no good can result for anybody and they might better employ the same space in printing advertisements of a fake promotion scheme, for then the readers would at least know it was an advertisement and be a little bit on the lookout, whereas many seeing assertions in this form take them seriously and are led to erroneous conclusions. Anyway, we repeat that if the Sun wants to do some real good for the country it can spend its editorial time and space better to devise ways and means to reduce the cost of bricklaying, for that is the thing that is worrying the prospective builder as well as the manufacturer of brick, the excessive cost of putting brick in the walls as compared to the price of the material.

HUMOROUS LOGIC.

That song, "Everybody Works But Father," was changed during the vacation days to "Everybody Works Father."

The big colleges are not taking kindly to the spelling reform, but that is no drawback to the reform. Big colleges teach theory, and the graduate picks up the practical ideas later.

A recent newspaper dispatch tells of a New Jersey woman who has trained her cats to run up a cherry tree when she gets after them with a broom, and as long as they are in the tree they keep the birds away from the cherries. Larger animals can be trained in the same way. We have even heard of men who would run from a broom in the hands of a determined woman.

ONE SEPTEMBER.

I remember
One September
When the purple plum-tree bore,
And the pears hung mellow,
And we heaped such ample store
Of pippins red and yellow.
Do you remember
That September?

When the aftermath was mown,
We tossed the fragrant hay—
Hay with withered daisies strewn,
Sweet as freshest flowers of May.
Dear, do you remember
That September?

And you couched upon the hay,
While I sat quiet at your head;
Little found we then to say,
Unless to praise the lovely day,
Or some book that we had read.
But do not you remember
The joy of that September?

Many a day has passed since then,
Many a sunny day and bright,
Rare and precious moments when
Earth has glowed with Eden's light,
And we talk when we're together
Of other things than books or weather;
But, Love, do you remember
The joy of that September?

—Celia Thaxter.

Written for THE CLAY-WORKER.

ON THE GROUND FLOOR.

The man who, in plain English, but in poetic measures
So glowingly paraded his rare and priceless "treasures,"
Who in his mind so suddenly became a millionaire,
But when he counted up his cash found that it was not there,
Will find if he investigates right square down to the core
That he failed because he hadn't got in on *the* ground floor.

The Bible tells us frankly to be sure of our foundations
And guarantees us safety if we follow its dictations.
In language clear it plainly states where we will surely land
By trying to erect a house upon the shifting sand.
You surely must the inference draw, that the only door
Through which you can to affluence go, is on *the* ground floor.

The friend, who to your office comes philanthropically
To get you interested in the great Salt River valley
Needs just a little careful watching, or the first thing you know
You've been played for a sucker and have lost your hard-earned dough.
And you wonder if there are things which would be worse for you
Than to miss your chance of riches by the floor falling through.

The writer of these classic lines has been clear through the mill,
And his tin box's chuck full of stocks that are not worth a mill.
The most of these were purchased at the request of some dear friend
Who was unduly anxious to have him, his fortunes mend.
And the logic of whose arguments, against being poor
Was, "Be absolutely certain you are on the ground floor."

—ANONYMOUS.

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The Richardson-Lovejoy Engineering Co.
(See page 322.)

WANTED, FOR SALE, ETC.

WANTED.

Position as manager or foreman of a sewer pipe plant by a young man who understands the business from beginning to end. Best of references. Address
W. S.,
Care Clay-Worker.
8 1 c

WANTED.

Situation by young man; seventeen years' experience in manufacture of fire proofing. Can take charge of plant. Best of reference. Address
O. W. J.,
Care Clay-Worker.
9 1 cm

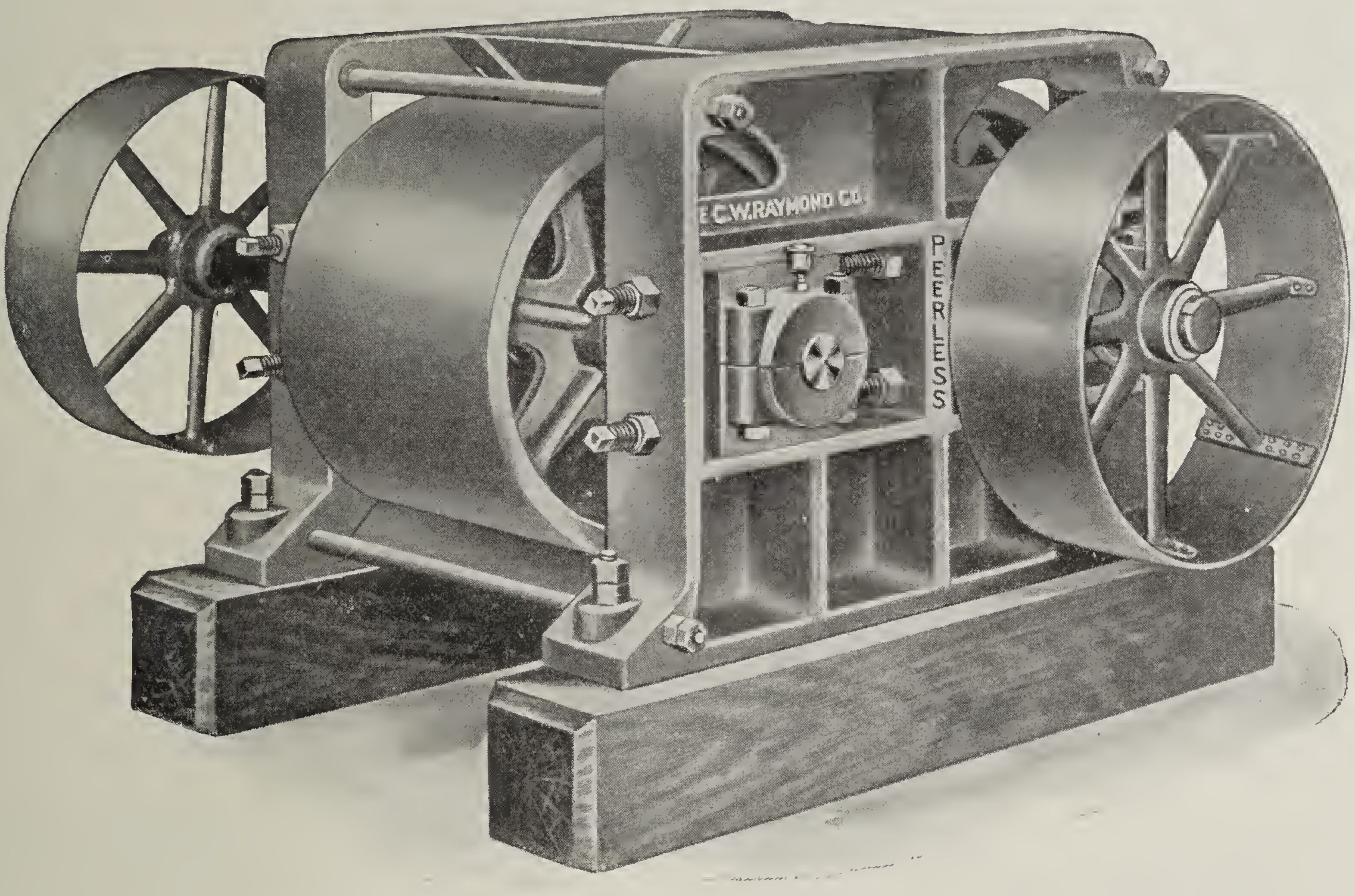
FOR SALE—Modern stiff mud brick plant. Practically new and in good condition. Large drying sheds. Three good clamps. Best of new machinery. Capacity 30,000 per day. Best reasons for selling. Address,
CARTHAGE BRICK CO.,
Carthage, Texas.
8 1 cm

For Sale, Wanted, Etc., Ads Continued on Pages 303, 304 and 305.

Raymond

Peerless Crusher

Smooth Roll



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A machine of durability, introducing features new in the construction of this class of machinery.

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The hopper is adjustable, carefully regulating the amount of material entering between the rolls, and also acts as a spreader, feeding the rolls evenly over their entire surface.

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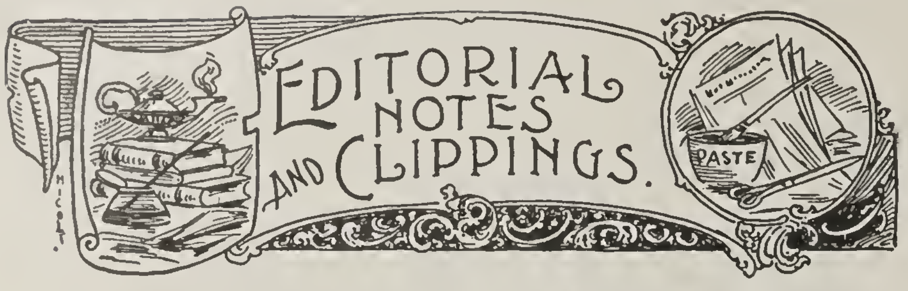


EDITORIAL NOTES AND CLIPPINGS.

Frank Bethune will erect a brickmaking plant at Talbotton, Ga.

J. L. Townsend will build a new brick plant at McDonalds, N. C., with 25,000 daily capacity.

Mitchell, S. D., is to have a new brickmaking plant. The clay has been tested and found to be excellent for building brick.

The Hillenbrand Brick Manufacturing Company, Louisville, Ky., want to purchase a second-hand steam shovel. Must be in good condition.

T. M. Favry, Dan Nichols and others have organized the Orange Grove (Miss.) Brick and Tile Company. The company is capitalized at $25,000.

A company has been organized at Liberty, Kas., under the name of the Liberty Vitrified Brick Company, with $30.000 capital stock. James Maloney is at the head of the enterprise.

Dr. A. S. Fraser, W. H. Watson and Thomas Calvert are interested in a brick plant to be built at Fraser, Iowa. A stock company will be organized and work on the plant begin in the near future.

During a heavy electrical storm at York, Pa., recently, lightning struck the plant of the Kopp Brick Manufacturing Company, and a fire followed which completely destroyed the works. The plant will be rebuilt.

The plant of the San Luis Brick Company, at San Luis Obispo, Cal., is now in operation, turning out 25,000 first-class brick every day. They now have orders booked for several million, which is a pretty good starter for a new company.

James E. Brandon, Jr., and John A. Brandon have bought out the other stockholders in the Claymont Brick Works, New Cumberland, W. Va., and are now sole proprietors. The former gentleman has superintended the plant under the old firm for a number of years.

J. D. Haugeburg, M. D. Lightfoot and George S. Holiday are interested in a movement to organize a company at Clinton, Mo., for the manufacture of building and paving brick. The clay has been tested and proven of good quality. The company will be capitalized at $100,000.

The Snyder Brick and Coal Company has been incorporated at Rockwood, Pa., with $30,000 capital stock. P. and H. Snyder, and George H. Moore, of Rockwood; Thos. Miller and George W. McCartney, of Connellsville, and Dr. G. Marton. of Connellsville, Pa., are the directors of the company.

The Carbon Clay and Mining Company has been incorporated at Carbon, Ind., to manufacture clay products. the chief of which will be fire brick. The company is capitalized at $25,000, and the officers are: President, William Goodin; vice-president, James Throop; secretary, E. C. Scheutz, and treasurer, T. S. Pell.

Application has been made for a charter for the Keystone Clay Products Company, Greensburg, Pa. Brick, tile and other clay products will be manufactured. The company will equip its plant, which will have a capacity of 50,000 daily, with modern machinery. E. P. Lippincott, an experienced brick man, will have the management of the plant.

J. I. Banks, general manager of the Victoria Land Company, Norfolk. Va., writes that his company contemplates erecting a brick manufacturing plant in the town of Victoria, a new town just west of Norfolk, and would like to correspond with manufacturers of brick machinery, etc. Mr. Bank's address is 1119 National Bank of Commerce Building.

The Dillsburg Vitrified Brick and Tile Company is the name of a new concern that has been organized at Dillsburg, Pa. A 30,000 daily capacity plant will be erected for the manufacture of white and buff building brick and vitrified paving brick. The company owns a tract of 150 acres of what is conceded by experts to be one of the finest beds of clay in that section.

The large brick plant of the Notch Brick Company, Lansdowne, Md., has been purchased by the People's Brick Corporation, which has recently been incorporated with a capital stock of $50,000. The new company will spend $30,000 in improvements. The members of the company are John W. Minich, Wrightsville, Pa.; H. S. Mancha, Baltimore; James W. Sipple, Harrisburg, Pa.

In a recent letter, W. P. Grath, president of the Illinois Supply and Construction Company, St. Louis, Mo., writes that they have lately had a good illustration of the old saw of "carrying coals to Newcastle," having recently booked an order from Genoa, Italy, for one of the Grath revolving roofing tile presses, with metal dies. Mr. Grath says: "Other manufacturers copy roofing tile presses made in the old country, but it remains for us to originate and get up presses which are new, and which, when shown in THE CLAY-WORKER, attract attention even from far-away Italy. We know of no other source to look to for this order except THE CLAY-WORKER. We are also indebted to THE CLAY-WORKER for an order from the Schwartz System Brick Company for one of our large models Grath special brick presses for making Spanish size, 12¼x5⅞x3¼, sand-lime brick, to be shipped to South America. and one Grath special hand power press from the same place."

The New York office of the Link Belt Company has been moved from 49 Dey street to 299 Broadway, New York city.

The brick plant of George F. Ball, at Keene, N. H., sustained a slight loss by fire recently, which started in the kiln sheds.

The plant of the Suburban Brick Company, at Martin's Ferry, Ohio. was damaged to the extent of $500 by fire in the kiln sheds early in the morning of August 11.

The Central Brick Company has been incorporated at San Francisco, Cal., with H. L. Miller, W. F. Perkins, J. M. Masten, E. P. Vandercook and L. Titus. The company is capitalized at $300,000.

The Owensboro (Ky.) Sewer Pipe Company has purchased five acres adjoining its present location and will erect a new plant for the manufacture of drain pipe. The old plant will turn out sewer pipe only, for which the company has a great demand.

The Muscogee Brick and Terra Cotta Company, at Columbus, Ga., has been organized with the following officers: President, J. T. Fletcher; vice-president, John P. Illges; secretary and treasurer, J. M. Feagan. The capital stock of the company is $75,000, all paid in.

The plant of the Brookside Brick Company, Cleveland, Ohio, was damaged to the extent of $5,000 by a fire which started in the engine-room. Two of the employes were badly burned. H. Spitz, a member of the company, says the plant will be rebuilt at once. There was no insurance.

The plant of the Rushville Brick Works, Rushville, Ind., has been running full handed all summer, filling orders, not only for the local market, but shipping brick to a number of outside plants. The plant has a capacity of 25,000 brick a day, and if the demand keps up the company will have to double this.

The Hartford Faience Company, Hartford. Conn., is sending out the following announcement: "The Hartford Faience Company wishes its friends to know that it has opened an office in New York city at 1123 Broadway. E. W. Robinson, general manager for the company, will be there Wednesday, Thursday and Friday of each week."

The Badger Pressed Brick Company, of Fond du Lac, Wis., has filed articles of incorporation. The capital stock is $25,000. The incorporators are E. H. Lyons, W. A. Titus and W. I. Hamilton. The business of this company will be to manufacture brick and other clay products and deal in all kinds of building material and general contracting.

The plant of the George H. Gynn Brick Company, Cleveland. Ohio, was almost totally destroyed by fire August 21, which started in the drying sheds. The plant was insured for a very small amount, less than half the loss, which is estimated at $60,000. The plant will be rebuilt at once and the order for brick machines, etc., has been placed with the Horton Manufacturing Company, Painesville, Ohio.

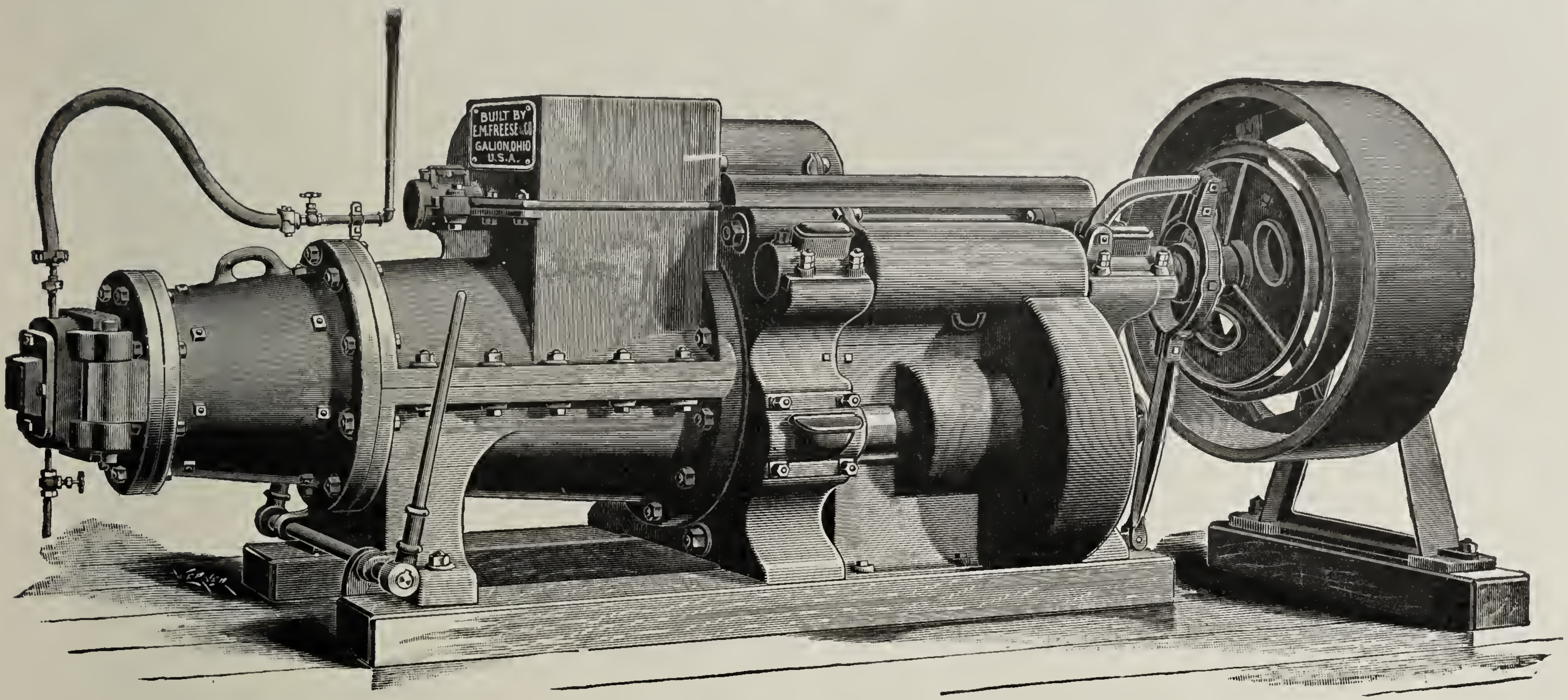
The work on the new plant of the Guthrie Mountain Coal and Cement Company, at Mapleton, Mo., is being rushed to completion as rapidly as possible. Mr. Lamport, the general manager, has his office building completed, and is the busiest man about the works. The plant will be equipped with machinery from the shops of the C. W. Raymond Company, Dayton, Ohio. The main office of the company will be at Kansas City, Mo.

G. W. Isenhour & Son, of Charlotte, N. C., are having an unusually busy season. The plant is equipped with machinery from the shops of J. C. Steele & Sons, of Statesville, N. C., and has a daily capacity of 125,000 brick per day, and yet they are so rushed that they can not let the brick cool before they empty the kilns. They now have on hand contracts for about 35,000,000 brick, so there is no danger of the Charlotte plant being idle for some time to come. They now have in contemplation the erection of a plant at Whitney, which they expect to have in operation by the first of the year.

A recent issue of the Construction News contains an excellent portrait of Louis Ernest Rodgers, president of the L. E. Rodgers Engineering Company, Chicago, Ill., together with a reading notice in which the editor pays tribute to Mr. Rodgers's business ability and practical engineering knowledge, and cites a number of firms whom Mr. Rodgers has persuaded to install his waste heat dryers. The News concludes its notice as follows: "During the past two years many important installations have been made by the L. E. Rodgers Engineering Company. The most recent is that of the Barber Asphalt Paving Company, at Des Moines, Iowa, for which Mr. Rodgers designed and constructed a complete waste-heat drying system of great originality for the company's $150,000 plant. This contract was secured largely through the prestige gained by Mr. Rodgers in the successful installation of similar systems in other large plants throughout the country, among which are those of the Flint Brick and Coal Company, of Des Moines, Iowa; Wabash Clay Company, Veedersburg, Ind.; the George H. Clippert & Brother Brick Company, Detroit, Mich.; the Athens Brick Company, Athens, Ohio; the Logan Brick Manufacturing Company, Logan, Ohio; the Laclede Fire Brick Manufacturing Company, St. Louis, Mo.; the Coffeyville Vitrified Brick and Tile Company, Coffeyville, Kas. There are two important factors in business success which are possessed by Mr. Rodgers—practical knowledge and an attractive personality. The company not only furnish plans for and to construct drying equipments, but also design complete clay-working plants. Mr. Rodgers has associated with him in his busi-

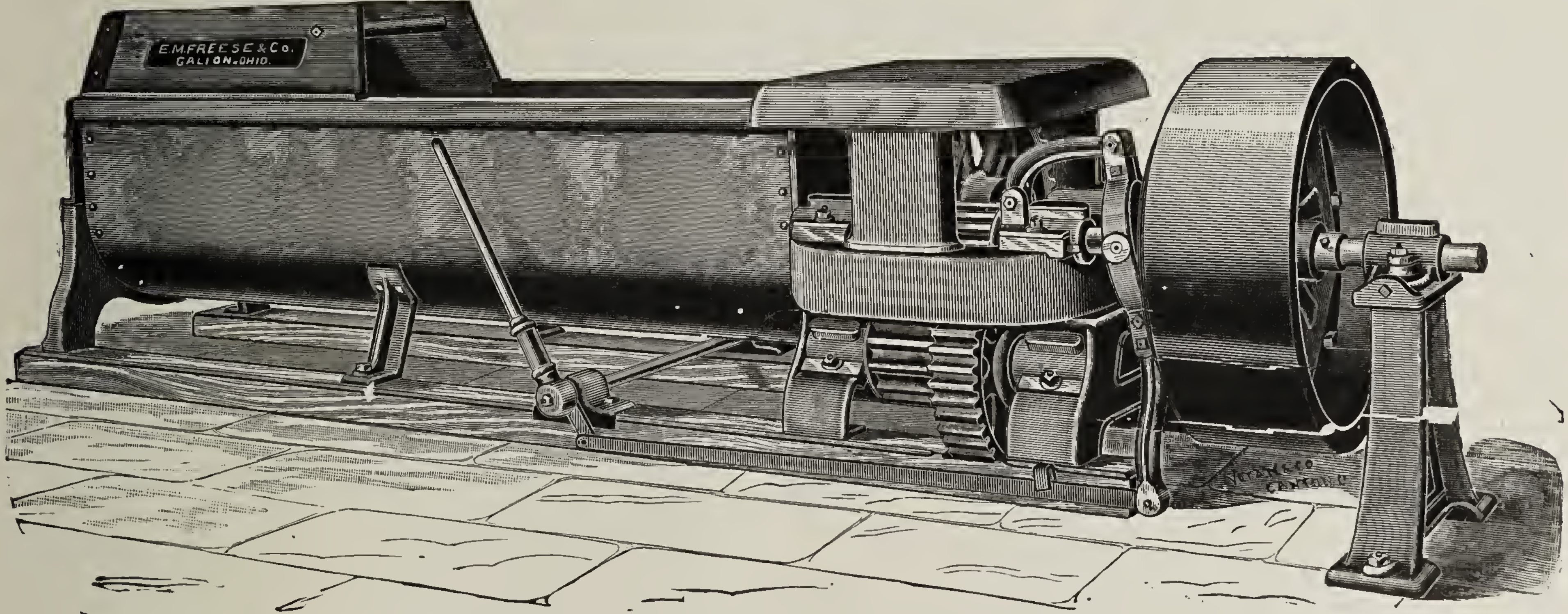
(Continued on page 298.)

Our Mammoth Brick Machine


BUILT BY
E.M.FREESE & CO.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

Our Pug=Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitetd for making a fine quality of brick.

E. M. FREESE & CO., - - Galion, Ohio.

Mention The Clay-Worker.

See Ads on Pages 344 and 345.

EDITORIAL NOTES AND CLIPPINGS—Continued.

ness enterprise a capable staff, which enables him to cover with efficiency every detail of a modern clayworking plant's equipment."

The Rolfe Brick Company has been incorporated at Portland, Ore., with $50,000. The incorporators are: F. H. Hilliker, Frank A. Sweeney, G. L. Archbold and James M. McNaughton.

The Tulsa Vitrified Brick Company, Tulsa, Okla., is installing machinery for the manufacture of vitrified paving brick. Heretofore they have made building brick only, but a number of streets of Tulsa are to be paved with brick, and the Tulsa Vitrified Brick Company will supply the brick.

Margaret Caldwell, administratrix of the estate of George B. Caldwell, has filed suit against the Kanne Brick Company, Peoria, Ill., for $10,000 damages on account of the death of G. B. Caldwell, resulting from an accident in the company's clay bank. It is alleged that the bank was unsafe, that the company knew it and made no provisions for the safety of the employes.

An electrical storm which passed over South Evanston, Ill., recently, wrecked the plant of the Illinois Brick Company. A fierce gust of wind lifted the roof off the factory, which collapsed, burying a number of workmen under the debris. Immediately following the collapse the building was struck by lightning and took fire. Sixty men were employed about the plant and scarcely one escaped without injury. Five of the men were quite seriously injured and six horses were killed outright.

The Buffalo Forge Company, of Buffalo, N. Y., has recently closed a large contract with the Bethlehem Steel Company for forced draft equipment, consisting of six fans and engines (direct connected), to drive the same. There is included in the contract provision for complete accessories in the line of dampers, speed regulating valves, piping, ducts, etc. They report the contract as secured solely on the engineering merits of the apparatus offered, several other companies submitting proposals with lower bids.

The Fiske & Co.'s brick plant at Dover Point, N. H., which resumed operations last March, has since been doing a big business manufacturing high-class brick for building purposes. The plant, which was remodeled last winter, is one of the largest and best equipped in New England and is being run at its full capacity every day. Bricks are being turned out in large numbers and still they are unable to fill the orders which are coming to them daily. They have made seven and a half millions of brick so far this season.

Work on a new factory for the Evans & Howard Fire Brick Company, of St. Louis, Mo., has commenced on property recently acquired on the Terminal Belt railroad, near Clayton. The factory will be one of the largest in the State. The company has acquired control of nearly 200 acres of land, having bought it in small strips at various times in the last six months. It is said that the land and new factory will cost in the neighborhood of $250,000. The company's plant is now located in St. Louis, but increased business caused a demand for enlarged quarters, and the officials decided to locate farther out. About 200 men will be employed.

The Berg & Oxlet Brick Company has been incorporated at Los Angeles, Cal., by C. G. Berg, Jacob Beck and W. C. Petchner. Capital stock, $55,000, of which $50,000 has been subscribed.

The Buffalo Forge Company, of Buffalo, N. Y., reports an increasing business in Japanese export trade, and has recently closed a contract with Mitsui & Co. for thirty-six extra heavy smith-shop forges seventeen large railroad forges and five two-section heating furnaces.

Thomas Hampton, West Elizabeth, Pa., inventor of the Hampton Patent Down Draft Kiln, writes that he is having a splendid demand for his kiln plans, having recently sold plans and specifications and yard rights to brickmakers in Japan, Australia, Cuba, South America, in addition to sales made here at home.

The Summitville (Ind.) Drain Tile Company, backed principally by Indianapolis capital, has filed articles of incorporation and a plant will be erected at once. Thomas G. Berry, George Evans and Horace Wood, of Indianapolis; Arthur Coffin, Alexandria, and J. F. Morris, Summitville, are interested.

The Mission Ridge Clay Company, Chattanooga, Tenn., which bought the plant of the Mission Ridge Brick Company, has been making additions to the plant since July 1. The same will soon be completed, giving the plant a capacity of 100,000 brick daily. Besides the buff and iron spot building brick, the company also makes a fine fire brick. The company has about 300 acres of land on which there is a deposit of fine clay averaging 60 feet deep.

Brownstown, Ind., is to have a new brick manufacturing plant, the product of which will be building brick, hollow block and drain tile. The company will be known as the Jackson Brick and Holloware Company, and has been incorporated with $15,000 capital stock. J. and J. M. Robertson and T. and John Heller, Jr., are interested. They expect to have the plant in operation by the first of November.

The Bridgeport Theater Company, of Bridgeport, Conn., is now manufacturing concrete blocks for the erection of a large and handsome theater. It is estimated that 50,000 blocks at least will be required, together with 1,500 feet of water table, sills, etc. It is stated that this is the first of a chain of theaters to be erected of concrete blocks throughout the East. Hercules machines, made by the Century Cement Machine Company, Rochester, N. Y., are being used exclusively, and the stone provided are said to be exceptionally fine.

The Philadelphia & Reading railroad has just placed an order for heating and ventilating equipment for use in the additions they are making to their machine and boiler shops. The contract, awarded to the Buffalo Forge Company, includes six immense fans, heaters, tempering coils, piping, etc. The heaters are arranged for use with atmospheric pressure steam in connection with the Warren Webster Vacuum System. The fans are to be belt-driven from electric motors, "silent-chains" having been tried on other fans and proved not satisfactory.

BUFFALO WASTE HEAT DRYER.

"Buffalo" Waste Heat Fan Direct Connected Engine Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

"BUFFALO" WASTE HEAT FANS take the WASTE HEAT from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "BUFFALO" FANS have water-cooled bearings when necessary.

APPLICABLE TO BRICK, TILE AND TERRA COTTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol XLVI. INDIANAPOLIS, IND., OCTOBER, 1906. No. 4.

Written for The Clay-Worker.

CLAY TILES THE ROOFING MATERIAL OF THE FUTURE

Interesting Comparisons of Tile Roofing in Europe and America—The Glass Tile a Valuable Auxiliary to the Clay Tile for Skylights.

Tile Roofing Now Made in Colors to Suit the Fancy, Greens, Buffs and Other Shades Vying With the Standard Red.

"THE DAY IS coming in this country when the slate and the shingle will be relegated to uses educational—the former as an aid to the curriculum, the latter as an agent of discipline; for roofing purposes, tile will have superseded them."

This is the prophecy of a gentleman who has studied the roofing problem for years past and who is doing all in his power to bring the happy situation prophesied to pass. Progress, up-to-date methods and constant preaching by word and by the product of the doctrine of durability are its watchwords, although it depends largely for success in the future on what has brought success in the past—the old standby, the famous "T lock tile" of German patent. New uses for, and new devices in, tile have, and doubtless will, come with the march of years, but in the "T interlocker" the Ludowici-Celadon people assert they have obtained perfection for all the great number of practical and necessary uses to which it is put. But more of this later.

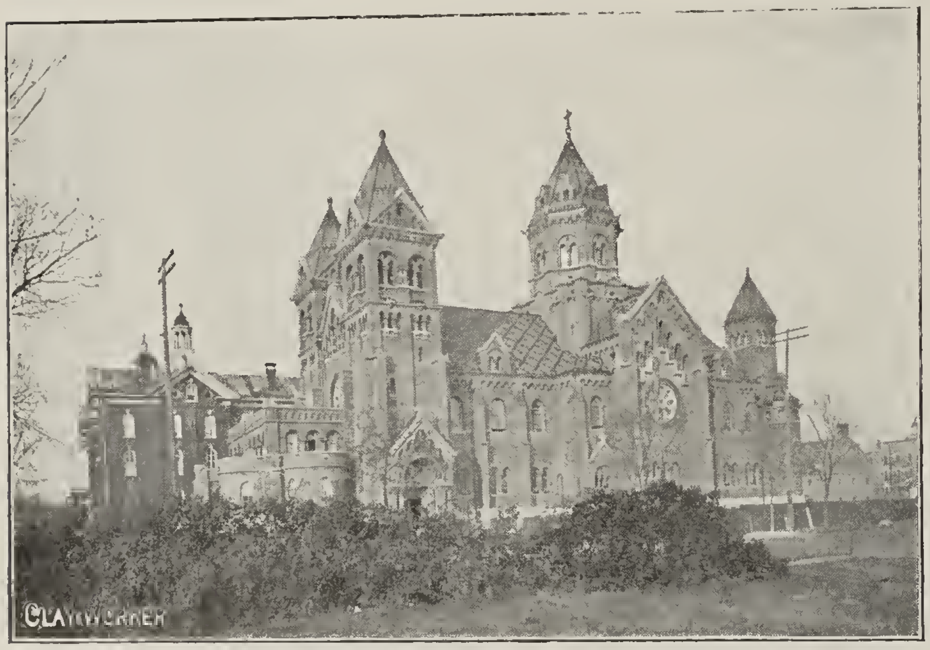
Red Tiled Lodge or Gateway to Suburban Residence, Beverly, Mass.

With the decrease in quantity and increase in price of lumber, is bound to come a vast increase in the demand for tile roofing augmented by a growing realization of its immense superiority over other materials for the majority of work, and its ultimate cheapness. This country is too young in tile roofing as yet to afford any real object lessons in this feature of "ultimate cheapness." Abroad it is nothing to find tile roofs hundreds of years old. In Rotterdam there is one roof, still in position, that was laid 960 years ago. It is weatherproof and intact. A roof in New Orleans that has weathered two centuries is the best this country can boast so far as is of known record.

So that in the older lands, Germany in particular—the home of the parent of the Ludowici-Celadon Company—the use and manufacture of tile roofs is very far in advance of what it is in this country. In Germany tile is shipped like lumber, so common a commodity is it. The plant of the parent company at Jockgrim, Pfalz, Germany, employing 5,000 men, turns out five or six times the product of the four plants of the Ludowici-Celadon Company in this country. The shipments abroad run in the neighborhood of 1,200 cars a month, as against shipments of about 3,000 a year in this country. The four factories of the company in this country, located at New Lexington, O.; Alfred, N. Y.; Ludowici, Ga., and Chicago Heights, Ill., have a total capacity of 360 squares a day.

It is to be emphasized, however, that the use of tile in this country is still in its infancy. It has been tried and found, in the language of the street, to be "the goods." The possibilities of this country as a market for this product, as for any other, have the older countries discounted over and over, and it is estimated that within ten years the Ludowici-Celadon Company in this country will have equalled and passed the parent company. In short, that the whole tile market in this country will have gone far ahead of the old world market. How long it will be before there are tile roofs in this country 1,000 years old is very generally conceded to depend upon how long the millenium holds off, or whether the continent sinks to take on a new series of stratifications within that time. But then, if the latter occurs, very likely learned archaeologists from Egypt and China will gather here to excavate and will take back with them as models the wonderful relics in perfect preservation of the "ancient tilemakers and clayworkers," so where will be the loss?

Meanwhile, with great facilities for special artistic types and variations, the Ludowici-Celadon Company proposes doing much of its share for the future in plain, everyday sort of work, that must at once make a good showing and stand the test of time, with the already-mentioned "T 1" interlocking tile. This tile has stood the test of thirteen years of use since its introduction to the market, and the sales of it comprise at present 75 per cent of the company's business. It goes without saying that to do this business the tile must be thoroughly hard burned and of first-class shedding surface. This type is a large tile, each tile interlocking perfectly with every one immediately about it, and each tile being provided with lugs with which it may be wired to the purlins. A roof of this tile can be laid at little expense for factory work which is of simple lines. It can be laid upon open steel construction, which produces an absolutely fireproof roof, or it can be laid upon wood sheathing. A roof constructed in this latter way is semi-fireproof, and for durability cannot be equalled by any material in the market, according to the proud boast of the manufacturers of the "T 1" tile. The cost of such a roof on large surfaces is said by them to be practically the same as slate, and they claim for the tile infinitely more durability.



The Saint Rose Chapel at LaCrosse, Wis.

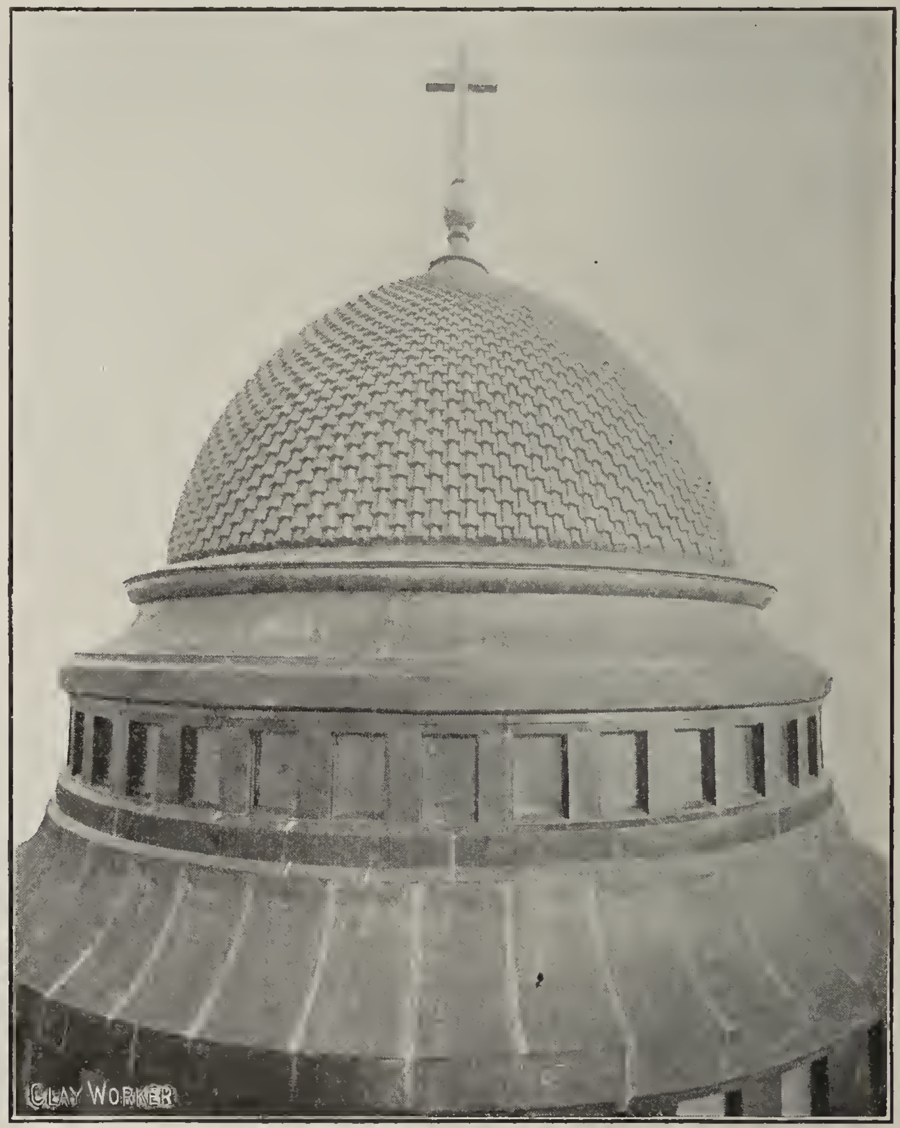
Chicago offers one of the finest examples of the use of this pattern of tile in large quantities. At the plant of Pettibone, Mulliken & Co., manufacturers of frogs and crossings, 4,000 squares of these tiles were used. A somewhat similar job is that of the immense factory of the Frost Engine Company, manufacturers of engines, boilers and dry pans, at Galesburg, Ill., where all the buildings are covered with these tiles.

It must not be supposed, however, that because the bulk of the demand for this pattern comes in the line of factory work and for uses essentially practical, that it is not equally adapted to uses at once practical and artistic. One has only to look at the picture of the St. Rose Convent Chapel at La Crosse, Wis., to see that this is true. Here the "T 1" German patent was used to bring out patterns in colors on the roof with most beautiful results. Green is the predominating color in this roof, and into it all the other shades and colors employed in the pattern scheme blend perfectly. The points on the roofs and turrets where the shadows have not fallen show off the lines of the pattern to advantage. Much of this tile is used, also, in cottage roofs, where artistic effects for comparatively small outlay are desired.

Probably the greatest achievement of the present day in tile roofing from a practical point of view has been the development of glass tile for lighting purposes. Its advantages over the ordinary glass skylight are manifold.

In the first place, the glass tiles are of the same pattern as the clay tile, and in factory work, upon an open steel construction, the glass tile may be inserted just as a clay tile would be in any number or in any position desired. This does away with the cost of sheet metal work, which is rendered unnecessary in skylights of glass tile, although absolutely essential in skylights of the older type.

Again, as to durability, the doing away with the sheet metal work or even of wired glass, plays an important part. It is well known that galvanized iron and tin yields quickly when it comes in contact with the gases that arise almost invariably from a factory. The life of this customary support to the skylight is three years, or four at the outside, and then it must be renewed or away goes the skylight. Moreover, the glass tile washes clean, while the glass surrounded by the sheet metal work never can be.

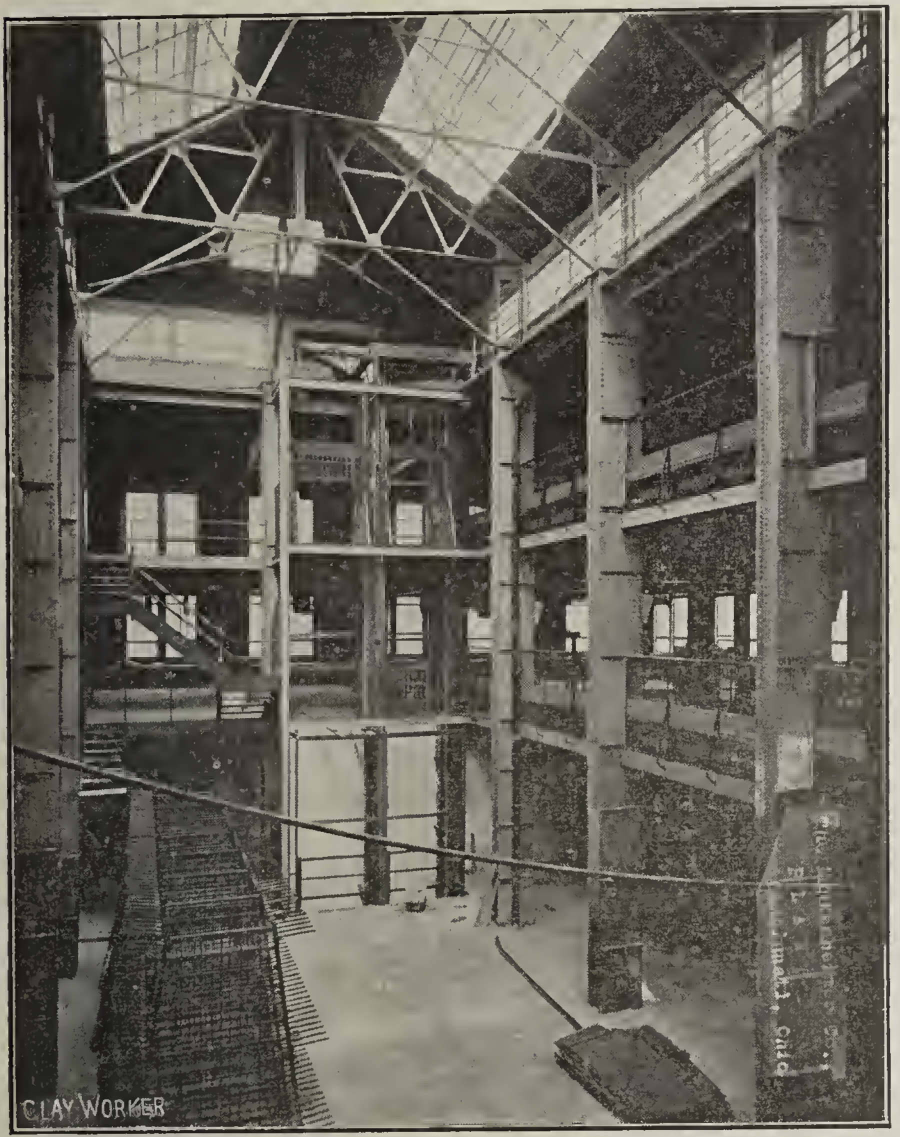


Convent Dome, Glen Ridge, Pa., Roofed with 8-inch Graduated Conosera Tile.

Finally, the light obtained from use of tile skylights is far superior to that obtained in the old way, and does away with the use of prisms and other means of inducing outside rays into dark interiors. The corrugated surfaces of the tile act prismatically. Perfect dissemination of light follows. There is no direct ray. This means the best kind of light for the workman, and it gives it at greatly reduced expense, for it is estimated that the glass tile require one-fourth the regular skylight area and give the same or better results. The photograph taken in the plant of the Lunkenheimer Company, of Cincinnati, illustrates admirably the difference in the light obtained through the prismatic character of the glass tile and that obtained from the ordinary windows.

In pure art work the Ludowici-Celadon Company can probably show no better proof of its skill than in the buildings erected by J. H. Moore at Lake Geneva, Wis. It was the idea of Mr. Moore, aided and abetted by his architect, Jarvis Hunt, to give the buildings of his magnificent country home an antiquarian flavor. He wanted to produce the graceful lines that age and mellowed decay show in the old country homesteads, without waiting for time to turn the trick, and in such wise that when man had turned the trick Time would be able to make mighty little further impression. In short, he proposed to secure all the charm and none of the weakness of age and decay. To produce this effect, first of all the ridge of the roof was built in such wise that when completed it resembled the spine of an undulating serpent. Then, where the ridges bent to form the gables, there was still more "fake" sinking, and the valleys, to get the right artistic form, were specially made in terra cotta. To crown it all, every tile that went into the roofs had to be of special brand.

A roof of this type presents many difficulties for the manufacturer of tile. The drooping eaves and the apparent breaking of joints on the gables tax the skill of the manufacturers, but that they are equal to it is shown by the illustration on the first page, nor is the color scheme a thing lightly to be considered. Green is the predominating color to give the effect of mossy antiquity, greens running from light to dark, and shading now and again in effective spots into three or four shades of rich browns, running from lightest to darkest. The best praise one can give it is that the effects constantly striven for are attained, and as the roof is the part where these triumphs could chiefly be secured, the tile makers are certainly deserving of high credit.



Clay and Glass Tile in Combination at the Manufactory of the Lunkenheimer Company, Cincinnati, Ohio.

The eight-inch Conosera tile, manufactured at Alfred, N. Y., is made up in graduated forms. It is a fine shade of red, the color running the same throughout. It has been used with splendid results and the convent dome at Glen Ridge, Pa., illustrates some of the work to which it has proved adaptable.

The Imperial Spanish tile, of a natural red-burning clay, is another type put forward by the Ludowici-Celadon Company. It is manufactured at New Lexington, O., and a roof of it presents a beautiful appearance.

A unique example of the uses to which tile may be put with quaint results, is shown in the gate hood before the residence of C. S. Houghton, Boston, Mass. It was produced by the use of the "T 12" interlocking Spanish tile, and the roof is of a fine red shade. The same tile shows to even better advantage when spread over a larger surface, as in the roof of B. J. Allen's residence, Beverly, Mass.

The company also calls attention to the beautiful effects produced by glazes. A new glaze called Brookville green was selected by Messrs. Parmer & Hornbustle, architects, New York, for the Carnegie Technical Schools at Pittsburg, in competition with all tilemakers in the United States. These tile do not run even in color, but the shadings from light to dark, both green and brown glaze, produce a beautiful effect on the roof, the finish being equal to fine pottery.

Thus we have seen the chief types of tile put forward by the Ludowici-Celadon Company. They make the other older and cheaper types as well, but they do not say much about them when advocating the hastening of the day that will devote the slate to the improvement and entertainment of the small boy, and the shingle to the stern uses of punishment. In that glad day the Tile Age will indeed be in the full morning of its glory. The small boy will be so sick of shingles that he will never want to see them on a roof when he grows up. The budding physician and lawyer will doubtless continue to open their careers by hanging out shingles, but it is safe to guess that each will blossom forth in a tile as soon as his practice warrants. SCRIP.

Tile Roofed Suburban Residence, Beverly, Mass.

The scientists have figured it out that the best way to prevent baldness is to read poetry. This may be good news to some of our friends, and may stimulate the sale of a slow-moving class of books, but as for ourselves, we confess to having been aware of this thing for some time. But, while we like to indulge in a little poetry, if we have to make a regular diet of it, and take everything that comes, we prefer the baldness—and we really don't recommend the remedy to others, that is, except those who have long hair and poetic leanings.

Written for The Clay-Worker.

THE BRICK MANUFACTURERS OF WILMINGTON AND THEIR PLANTS.

A TRIP TO WILMINGTON, DEL., recently and a visit among the brick manufacturers there proved interesting and instructive. James B. Oberly, a genial and courteous man, whose office is situated at 838 Market street, started the line of information. His plant, situated at Third and Cleveland avenue, is equipped with a Martin machine, which turns out 5,000,000 bricks per year, but is not often pushed to its full capacity. The three kilns have a capacity of 200,000 each, stacking thirty-eight high. Mr. Oberly is pressed for time just now, as business is brisk in Wilmington. Bricks are bringing good prices and the demand is greater than has been known of for years. The Oberly brickyard is supplying bricks for several large operations, including seven houses at Elm and Harrison; a school at Thirtieth and Madison; an engine house at Delaware avenue and Tathal; four houses at Shalcross avenue and Lincoln; six houses at Maple and Brown; five houses at Linden and Brown, and many more contracts for houses and buildings scattered here and there through the city.

The next plant visited was that of the Delaware Terra Cotta Company, successors to James H. Beggs & Co., brickmakers. This company is composed of John P. Allmond, president; Albert Beggs, vice-president, and W. S. Allmond, secretary and treasurer. The old company of James H. Beggs & Co. was absorbed by the Delaware Terra Cotta Company in 1890. Up until that time the latter firm had been manufacturing sewer pipe and fire brick and continued it in connection with the building brick interest until 1901, when the sewer pipe plant was destroyed, since which time they have acted as sales agents only for sewer pipe and fire brick and directed their energies in the manufacturing line to common building brick. Mr. James H. Beggs was president of the corporation until his death in 1900, since which time Mr. John P. Allmond has been at the head of the concern.

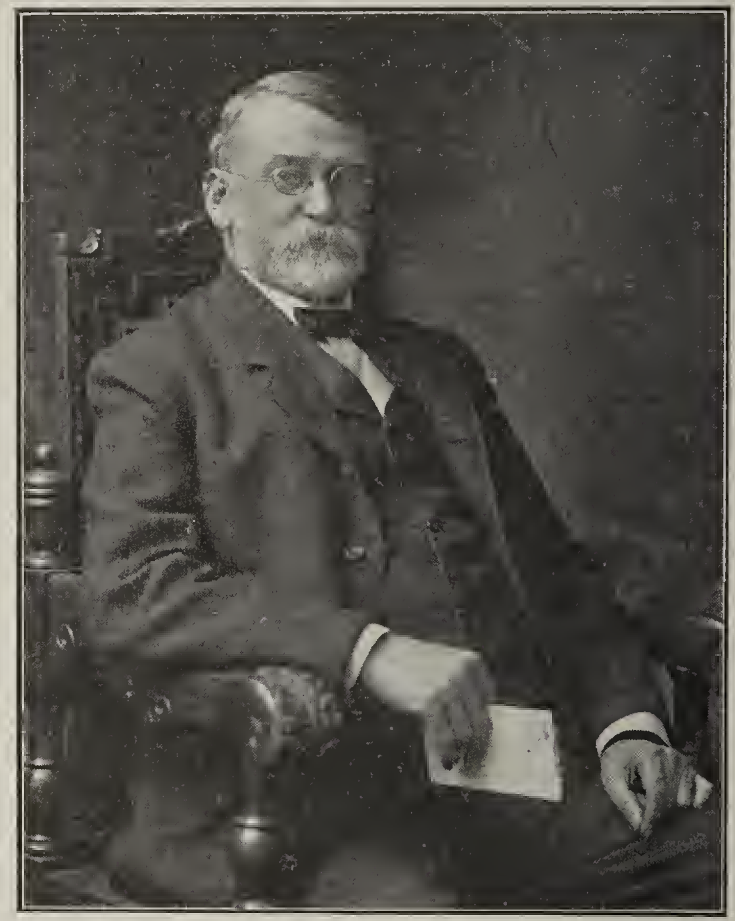
A commission appointed by resident Judge Spruance to condemn the property of the Delaware Terra Cotta Company in the Ninth Ward for the purpose of cutting a street through to allow a trolley line to connect with the shops of the P. B. & W. Railroad Company, met recently, and after hearing many witnesses made an award of $25,000 damages. The same amount was awarded by a previous commission. It was the consensus of opinion among the witnesses that the entire plant would have to be torn down, and that the cost would be about $50,000. The company owns sixty acres, but not all of this ground is used for the manufacture of bricks. Part is used for farm land. They have twenty-five head of horses, and the hay used for feed is raised on this same farm land. They have recently installed a new steam shovel, supplied by the Thew Automatic Company. The plant has one Chambers and one Penfield brick machine, the combination turning out 80,000 bricks per day. The seven kilns, stacking forty high, have a capacity from 225,000 to 240,000 each. They are supplying red bricks at present for the new station. This, with the power house, will require over 1,000,000 bricks. Other than these their contracts call for bricks for electric light power house, on the Brandywine; Bell Telephone buildings, bricks for a new pumping station near the bridge, twenty-four three-story houses, at Fourth and Union; two apartment houses, where the Sayre & Fisher front bricks are in evidence. The latter is a fad just at present among the architects. Other contracts are for a handsome residence to be erected at Ninth and Brown streets, and four or five rows of houses in North Wilmington.

Mr. Allmond, Sr., has a surprising trait, that of candor. Now, most brick manufacturers, upon having the remark put to them, "You men ought to be making lots of money," meet you with this disconcerting reply, "We ought, but we're not," following it up with many puzzling explanations, etc. Mr. Allmond, when confronted with the accusation afore named, responded with the candid remark, "We are." We mentally pat him on the back. There's no disgrace in making money. Why should a man hesitate to acknowledge the truth?

The trouble confronting the Wilmington brick manufacturers is the same confronting those of other cities. The labor question. Irrational workmen, who seem to lack the necessary sticktoativeness. "Work today, play tomorrow," is their motto. A burner makes $35.00 one week and any little old wage the next. Most of the labor is colored, and the man of color is a very unstable individual. He likes plenty to eat, plenty of heat (in winter) and more than plenty of time to enjoy both.

The Clay-Worker representative suggested woman labor, and was greeted with the information that Germany boasts of it. Women in brickyards! Women at work on houses? Shall we call such a nation "femininity-disintegrateo"?

We left Mr. Allmond to his office, his own genialty, and his busy telephone, and proceeded to interview Mr. Bradley, of the Wilmington Brick Company, whose plant is situated on the B. & O. road, on the outskirts of Wilmington. Their Martin soft mud and Chambers stiff mud end cut machines turn out 10,000 brick per year. Their four kilns have a capacity of 240,000 bricks each, stacking forty high. They have Martin steam dryers, and supply bricks for Wilmington and Philadelphia.



J. P. Allmond, Wilmington, Dela.

"This is one of the busiest seasons Wilmington ever had," said Mr. Bradley, "but we were unfortunate enough, in the midst of our busiest season, to lose four days, owing to a broken shaft." They are very busy, supplying brick for many manufacturing buildings and houses. Their plant is one of the largest in the vicinity of Wilmington, covering an area of thirty-five acres of ground. The plant is not under cover, but during the cold winter of 1904, when Baltimore was demanding such quantities of bricks for rebuilding the city, the yards worked the full season, naturally under many inconveniences and against many comforts.

So we will give Wilmington a hearty and cordial grasp of the hand and wish nothing but good luck, and plenty of it, to her residents, particularly the brick manufacturers.

M. E. Lockington.

Written for The Clay-Worker.

BUTTON-HOLE TALKS.

Misunderstood Grief.

WE WERE ushered into a broad, screened, comfortable veranda which looked like an oasis on that hot day, so cool was it, so replete with easy chairs, rugs and lounges, and the thousand and one touches that betoken the hand of the real housewife. On a circular table near the center stood a vase of fresh flowers carelessly arranged, but giving that finish to the whole place that seems so simple, and yet means so much and tells a whole volume of the care and love and beauty of the presiding presence. I myself was much attracted and pleased by the whole make-up, but by the vase particularly, that it was in use, and so well used and in such pleasant surroundings, for I knew the man who made it.

Stock Sheds, Delaware Terra Cotta Co.

Getting in the Clay.

Glancing at my companion, however, I found his eyes fixed on the vase and brimming with tears. Sinking into a chair, and in a choking voice he answered my inquiring glance. "Old man, when a poor boarding-house devil comes into a place like this, and sees what real living is, he realizes how much the real pleasures of life come from these little touches of a woman's hand; how much they brighten life and are an offset to all the dreary drudgery of the every-day turmoil. They are such little touches, but they mean so much. They are the fragrance of life, its poetry and color, and they beautify it and make it worth the living and the having, just as the little bit of bright color in the painting redeems it, brings it out and gives value to the somber colors back of it. And when a man has had this in his life and has lost it and goes without it, living his dreary colorless life day after day, and year after year with nothing but memories of the past, and all hopeless of the future, and then drops into a cozy nest like this, he can hardly control himself. The placing of that vase, the gathering and arranging of those few flowers—so careless and yet so effective—means much to one who has had such hands ministering to him."

He bowed his head and I was so sorry for him in his trouble that I felt I must comfort him, little as I knew how to, so I spoke low to him, and soothingly of the lost one and of the pleasures of recollection and of the mysterious dispensations of Providence, and that he must remember she was happier where she was. Just then, our host pulled me violently by the sleeve and dragged me into the house, whispering: "Happier where she is! Why, you ass, she got a divorce from him and is married again." Gates.

BOAT LINE TO BE ESTABLISHED BETWEEN ST. LOUIS AND KANSAS CITY.

There is a fair prospect for a barge line being established between Kansas City and St. Louis on the Missouri River. A move of this kind has been periodically threatened for years by the Commercial Club and it appears now that they are going to be forced to carry out their bluff. To the present time the mention of a barge line seems to have been enough to make the railroads give something in the way of special rates to the leaders in the movement, and thus the matter was always hushed up for another term of months. There seems to be a great deal of hesitancy at this time on the part of railroad men to make any special agreements, and as a result a good many merchants are being forced to pay the exorbitant regular rates instead of the rates they are accustomed to. That puts them on an even footing with the other merchants in the same line who have never been favored and makes the entire section pay a rate which is too high. Now it seems to be up to the members of the Commercial Club to carry out their plan and establish a barge line so they can have river competition and thus get a lower freight rate. Such a lower freight rate will, of course, be applicable to all, and will in that way be of great benefit to not only Kansas City but the entire West on everything which must be shipped from the East and where river competition can be used. This should apply to brick, as they can be handled by barge and should either be brought in that way or at a reduced railroad rate. Brick made along the Ohio River can be brought by barge direct to Kansas City, and the freight opening thus created should benefit all those who buy brick brought in from that direction.

The Kiln Sheds.

Written for The Clay-Worker.

THE ECONOMICAL GENERATION AND USE OF STEAM IN BRICK YARDS.

(Third Paper.)

Radiation.

PUT A HOT BODY, as the sphere A in the illustration, Fig. 6, on a non-conducting stand under the receiver of an air pump and quickly exhaust the air. If A is of such magnitude and temperature as to emit considerable heat, the glass receiver will, in a short time, begin to grow sensibly warmer, as may be perceived by placing one hand against the outside of the jar. This rising temperature is undoubtedly due to heat received from the hot sphere A, but the question is, how has it been communicated from A to the glass, since the intervening space is certainly destitute of air or any other ponderable matter?

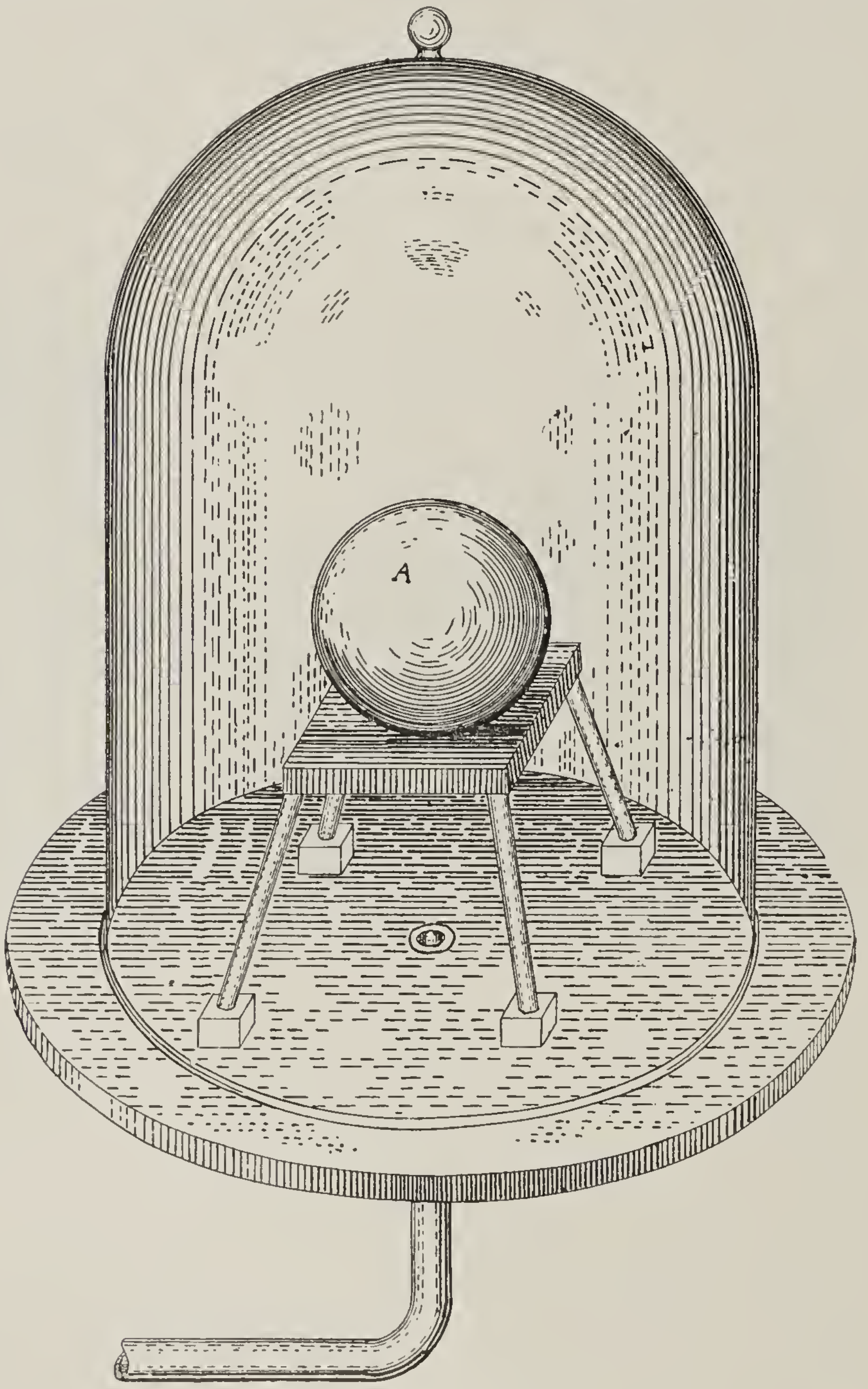


Fig. 6

It is not at all probable that any appreciable quantity of heat energy could pass downward through the insulating stand, and it is therefore quite certain that heat has passed from A to the glass directly across the vacuum existing within the jar. But heat, as we have seen in the preceding paper, is one of the various forms of energy—most probably molecular energy; and it is scarcely rational to suppose that absolutely empty space can receive or communicate energy. There must, therefore, be some medium occupying the space under the receiver which is capable of taking up and transmitting energy from one point to another through otherwise matterless space.

This medium has received the name of ether, and it is supposed to permeate all spaces, large and small, between the portions of ordinary matter, extending beyond the uttermost stars and penetrating among the molecules of the densest material substances. It is, in fact, a universal medium in which the molecules of ordinary matter are immersed.

No vacuum of the ether can be obtained, nor can it be confined, for it is so exceedingly subtle that it passes through all matter, as water passes through a sieve. It is not strange, therefore, that we should be almost utterly in the dark concerning its nature and properties. It has, however, been ascertained beyond the possibility of a doubt that energy as manifested by heat, light and electricity is propagated through the ether by means of vibrations or waves, and that these waves are produced by the vibrations of the molecules of the different forms of matter. The existence of these waves are readily demonstrated by the usual tests of wave motion and their properties are well known.

They are transverse; that is, the particles of the ether do not move onward carrying the disturbance, but vibrate back and forth in a direction at right angles to the advance of the wave. They can interfere; that is, if two trains of waves overlap one another at some point, so that the crest of one wave coincides with the hollow of the other, the displacement of the particles of the medium at that point will be the difference in the amplitude, or size, of the coinciding waves—if the two waves are equal they will destroy each other, and there is no motion at that point.

Again, the overlapping waves may occur at such time that the crests coincide. The resulting displacement will then be equal to the sum of the displacements of the two waves. This overlapping of waves is customarily termed "interference." The velocity with which ether waves are propagated is also measureable. In pure ether it has been ascertained that they travel at almost exactly 186,000 miles per second, but when these waves encounter ordinary matter immersed in the ether, their velocity is changed, and changed different amounts for the different wave lengths. Some of the waves impinging on the portions of matter will be reflected, some refracted more or less from their course, while others will pass directly through the obstructing body of matter. Some of the waves will also be "absorbed" by the body and these absorbed waves produce in general heat effects in ordinary matter; for the vibrations in the ether, acting on the molecules of the body, increase their vibratory motion, and this is indicated, as we have seen previously and as in the case of the glass receiver of the air pump, by an increase in the temperature of the absorbing body.

Space and the complexity of the matter forbid further discussion of the subject of ether waves at this time, notwithstanding its surpassing interest and its transcendant importance in the economy of nature; for the physicists of today are slowly but surely nearing the conclusion that the great problems of matter and life and death are dependent for their ultimate solution on these very same ether waves.

We will now proceed to a consideration of a few of the practical features pertaining to the transference of heat energy by means of ether waves, or radiation as it is commonly termed.

Radiation losses, as the term is applied in and around brick factories, refers generally to the heat energy dissipated into the atmosphere from the heated exteriors of furnaces, boiler and kiln walls, boiler steam space surfaces, piping, etc. While it is generally recognized that this escaping heat foots up enormous losses in the course of a season's run, yet few of the brick manufacturers of this country appreciate the extent to which it eats up dividends and prefer to let the waste continue rather than investigate the matter and make the initial outlay required to effect economies in this direction.

In Europe, where the problem of existence has for many decades forced the people to make a continuous and exhaustive study of the science of economics, we find that greater attention has been given to the prevention and utilization of radiation losses than is customary among power producers in America. The practice among European brick manufacturers is to construct furnaces, boiler settings, kilns, etc., with exceedingly heavy walls and then what heat does make its way through the ponderous settings is frequently utilized in drying or partially drying the green ware.

In justice, however, to the clay manufacturers on this side of the Atlantic who are, in the main, shrewd and practical business men, it must be conceded that owing to the widely varying nature of their material, the problems of mixing and burning their wares made such exorbitant demands upon their time and thought that little attention could be devoted to the steam economies of the power plant or to the fitness of the man whom they had intrusted with the oversight of this particular department; and inasmuch as these losses were taking place so insidiously that only a searching investigation by a skilled engineer could reveal their extent, it is not at all surprising that the matter was neglected.

In practice the so-called radiation losses consist of two distinct main losses. 1. The loss by radiation direct, and 2. That absorbed by the air which connection currents cause to circulate in contact with the heated surfaces.

Formulas have been developed by Peclet and others, who have given careful and profound study to the matter, for calculating the losses due to radiation from heated surfaces. The conditions that enter into the solution of such problems are, however, of such a varying nature that it would not be reasonable to expect these formulas to give accurate results in all cases. They will, however, give a good general idea of what the radiation losses may be, and if accepted with that understanding they will prove a valuable guide in every day practice. The subject is of much too extended and complicated nature to be treated exhaustively here, so that we shall give only one or two of the simplest cases in order that a slight idea may be had of the methods pursued in solving problems relating to radiation losses. Those who wish to investigate the higher formulas will find them, together with the necessary tables, in any good engineering handbook; such as Kent's Mechanical Engineers' Pocketbook.

The radiating power of hot surfaces varies largely with the nature of the material of which they are composed; that is, iron, glass, stone, brickwork, etc., will radiate different quantities of heat under the same conditions of temperature.

The following list, taken from Peclet's experiments, gives the radiating and conducting power of various substances most commonly met with in brickyard work, column A being the number of British thermal units radiated per square foot of surface per hour for a difference of temperature of one degree Fahrenheit between the radiant and the surrounding medium, while the values in column B show the number of British thermal units capable of being transmitted per square foot per hour through a plate of the material one inch in thickness for each degree Fahrenheit difference in the temperature of the two surfaces:

Material.	A	B
Copper	.033	515.0
Wrought iron	.565	233.0
Cast iron	.648	233.0
Zinc	.049	225.0
Lead	.133	113.0
Stone	.736	13.7
Glass	.595	6.6
Brickwork	.740	4.83
Sawdust	.721	0.52
Soot	.820	0.31

The loss from hot surfaces due to radiation only, when the difference in the temperature of the radiating surface and the surrounding medium is small, may be calculated by means of the formula:

$$R_1 = R(t-t_1), \qquad (1)$$

where t is the temperature of the hot surface; t_1 the temperature of the surrounding medium, R the radiation in British thermal units per square foot per hour for each degree difference in temperature, as given in column A, and R_1 the total radiation per square foot per hour. This gives us the true radiation loss, while to obtain the total heat loss, the result obtained by the foregoing formula must be added to the loss due to the contact of the air. The latter loss has been found to depend to a considerable degree upon the form of the radiating surface, whether plane, cylindrical, or spherical, horizontal or vertical, cylindrical and spherical surfaces losing more heat than plane surfaces under the same conditions of temperature, and vertical surfaces more than horizontal. The nature of the material does not appear to affect the result appreciably; wood, iron, glass, lead, etc., losing about the same number of heat units for equal differences of temperature. For small differences of temperature, the loss occasioned by the contact of the air with radiating surfaces is given by the formula:

$$P = C(t-t_1), \qquad (2)$$

Where P equals British thermal units lost per square foot of radiating surface per hour, C equals British thermal units lost per square foot per hour for each degree Fahrenheit difference in temperature; and t and t_1 having the same meaning as in formula (1).

C, as we have previously stated, varies in a great degree with the form of the radiating surface, but this phase of the question is rather too complex and uncertain for consideration here. We shall, therefore, in what is to follow, take the value of C at .6 B. T. U., which is the actual loss of heat, as ascertained by experiment, per hour from a plate one foot square for each degree Fahrenheit difference in temperature.

Inserting this value of C in formula (2) we have

$$P = .6(t-t_1), \qquad (3)$$

Then to find the total heat loss due to radiation and contact with the air from heat surfaces, formulas (1) and (3) may be combined, which gives us, letting $(t-t_1) = d$

$Q = (R + .6)d$, where Q is the total heat loss per square foot of radiant surface per hour.

We may express this formula as a rule: To the radiating value given in the table opposite the material of which the hot surface is composed, add the constant .6 and multiply the number thus obtained by the difference in temperature in degrees Fahrenheit between the hot surface and the surrounding medium, the result is the heat loss in British thermal units per hour for each square foot of exposed surface.

This rule, however, gives results far too small when the temperature differences are greater 100 degrees Fahrenheit, since the radiating power, R, of the various substances augments in an ever-increasing ratio when the temperature difference exceeds this figure.

The usefulness of the rule, therefore, does not extend beyond giving us a fair idea of what heat losses must be taking place on account of radiation, but not what they might be.

THEO. RIZER.

(To Be Continued.)

MORE LABOR TROUBLE.

Now it is reported that one hundred infuriated factory girls in Des Moines quit work because a score of bricklayers, working on an addition to the Penn garment factory, wore pants that were not made by the union. Perhaps the bricklayers wore union suspenders and did not think it necessary to wear union suits.

Written for The Clay-Worker.

PAVING MATERIAL AND CITY FATHERS.

AND NOW THERE comes from Baltimore, that city from which fire furnished a series of unpremeditated tests of building material, reports of some experiments in testing paving material that are interesting. One at hand, furnished by a subscriber, in the form of a newspaper clipping, tells of an experiment of three years' duration tried by the city engineer of Baltimore, which it is said demonstrated to the satisfaction of the engineer that vitrified brick and wooden block pavements are the best. Seven different kinds of paving brick were used, one wooden block, one sheet asphalt and one of asphalt block, each being laid in sections across the streets, or strips rather from fifteen to thirty feet wide. The figures of cost in this connection, which are not the least interesting in the report, are as follows: Vitrified brick, $2.00 a yard; Wooden blocks, $3.00 to $3.25; Sheet asphalt, $2.00 to $2.50. It is stated that the wooden blocks showed the best result, with one of the vitrified brick a close second, both being in almost as good condition after three years' use as they were the day they were laid. The other pavements, it is stated, do not show up well. As a result of this experiment the engineer's recommendations are as follows:

"For residential streets where traffic is not heavy I would advocate the use of the best vitrified brick.

"For streets, business or residential, where traffic is heavy, I would suggest the laying of wooden blocks.

"For squares, plazas and extremely wide streets, I would advise the use of sheet asphalt.

"The vitrified brick pavement being less expensive than the wooden blocks, I would have it laid on the residential streets where traffic is not heavy," continues the report. "The wooden blocks being more durable than the vitrified brick, I would place them on streets where traffic is heavy. In this way the cost and wear would become equalized. The sheet asphalt with its clean, smooth surface is the most attractive of all pavements. It costs more than the vitrified bricks and is the least durable," the Baltimorean's report says: "On those streets where a pretty pavement is essential, the sheet asphalt would be advisable."

Now, while there are certain arguments that might be brought to bear in this case, and some of our brick experts may feel like taking some exception to these findings, (the same being both invited and welcome to these columns,) still, there is a pleasing aspect about an investigation of this kind as compared to many of the "personally conducted" and so-called investigations by city fathers that really makes us feel good. Quite frequently we hear of city fathers going on a junketing to other cities to examine new streets which have been laid with asphalt, masquerading under various obscure titles to suggest superiority, and while on such junkets manage almost invariably to absorb a lot of "enthusiasm" on the subject of the new paving material. Then they go home, make flowery reports of their findings and proceed to make contracts for some of the same kind of paving, and by the time the city residents awake to the fact that they have bought a sort of "gold brick," after the paving has been tried, weighed and found wanting, this bunch of city fathers has generally given way to another one which in time goes off and does the same thing over again with sufficient variation to make it interesting and sound plausible. There has apparently been so much of this that it is an actual relief to see real tests made, even though we may not feel entirely satisfied with the result of the tests nor the reliability of the findings for guidance in selecting paving material. It makes us feel that we are getting around to the right road to knowledge, and though we may stumble and blunder a little here and there, we will in time get straightened out to going smoothly, and the result will be beneficial to brick as a paving material.

Moreover, so long as the list of favored competitors to brick is reduced to the item of wooden block paving we can rest easy in the assurance that the balance will take care of itself. In other words, when it gets down to a question of brick and wood, the survival of brick is clearly defined. Without entering into an argument as to the relative merits of the two, the scarcity and high price of wood that is available for paving will, of itself, practically shut it out in a few years. As reported in this instance, it already costs considerably more than brick, and the advance in wood values is just now beginning to make itself felt, so that at the present rate of advance in wood products it will only be a few years when the present cost of wood paving is so materially increased as to put it practically out of the question for general use. It is, therefore, not

Putting in the Concrete Foundation for the Brick Pavement on Elm Street, Greensboro, N. C.

a time for fault finding, but rather for rejoicing in the fact that our city fathers in their "personally conducted" investigations appear to be earnestly trying to make real tests instead of just taking pleasant junkets, as has been too frequently the case in the past. We welcome the tests and assure all those who want to get real tests that they can have the hearty co-operation of the manufacturers of paving brick in their efforts to make their tests thorough and complete.

Written for THE CLAY-WORKER.

STREET PAVING IN GREENSBORO, N. C.

GREENSBORO IS called the Gate City, situated in the center of the far-famed Piedmont section of North Carolina. In 1890 it had a population of 3,117; in 1900, 10,035; in 1905, 25,000. Population, 1910, at the same rate of increase, 62,500. Lately it has been given a new name: The City Beautiful. It is also a city of colleges, with a yearly attendance of over 4,000 students. The city is in the center of the largest and most prosperous cotton-mill section of the South; is in the heart of the furniture manufacturing industry; is in the midst of a fine grain region; is in the center of tobacco culture, and is surrounded by the finest fruit-growing region of the South. The City Council some time ago decided to have the principal thoroughfare, Elm street, running south and north, paved, and after investigating different kinds of pavements in other cities, decided on brick. The illustrations show the work in progress at various places on the street. The paving was stopped a day or two in March, an injunction being granted to some property owners. They claimed that the brick used did not come up to the specifications. I think some other paving material people, probably the asphalt combine, was the cause of the disturbance. The city was prohibited paying out any more money to the Southern Paving and Construction Company, but they went ahead and paved the street. Expert affidavits were produced in court and the injunction was dissolved. The writer had on several occasions examined the brick and found them to be equal to any made anywhere in this country. Some people, who don't know a good brick when they see it, just started to kick, influenced by some bad spirits. The city got a good job and the work was well done. The plaintiffs claimed fraud, and the chairman of the street committee and the city engineer were severely roasted. The brick company that furnished the brick had no need to bribe anybody to accept their brick. They were of an excellent quality. The word vitrified was misleading; the specifications should have read "hard brick."

Celebrating the Laying of the First Brick Pavement at Greensboro, N. C.

There is in reality no such a thing as vitrified brick in the true meaning of the word. The definition of vitrified, according to Webster, means: Something converted into glass. That would be a nice mess in a kiln. What fools these mortals are.

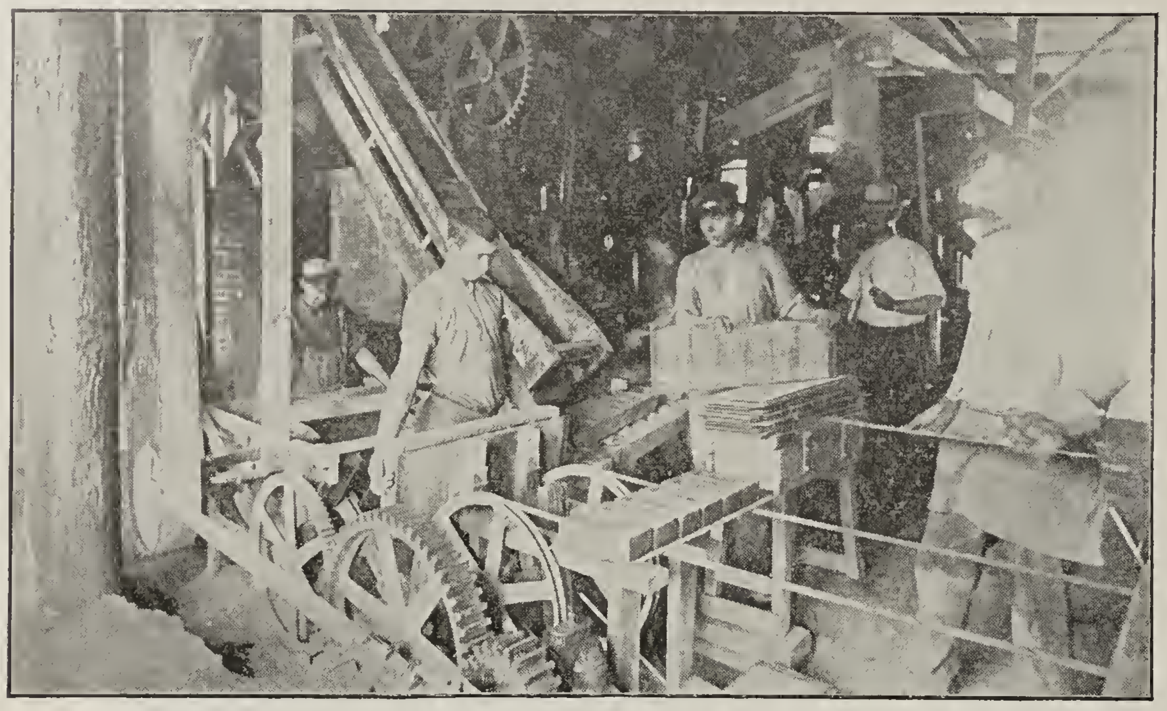
ANTON VOGT.

TREATMENT OF PAVEMENTS.

They took a little gravel
And they took a little tar,
With various ingredients
Imported from afar.
They hammered it and rolled it
And when they went away
They said they had a pavement
That would last for many a day.
But they came with picks and smote it
To lay a water main;
And they called the workmen
To put it back again.
To run a railway cable
They took it up some more;
And they put it back again,
Just where it was before.
They took it up for conduits
To run the telephone;
And then they put it back again
As hard as any stone.
They took it up for wires
To feed the 'lectric light,
And then they put it back again
Which was no more than right.
Oh, the pavement's full of furrows;
There are patches everywhere;
You'd like to ride upon it,
But it's seldom that you dare.
It's a very handsome pavement;
A credit to the town;
They're always diggin' of it up
Or puttin' of it down.

—*Washington Star.*

One of New Jersey's Latest and

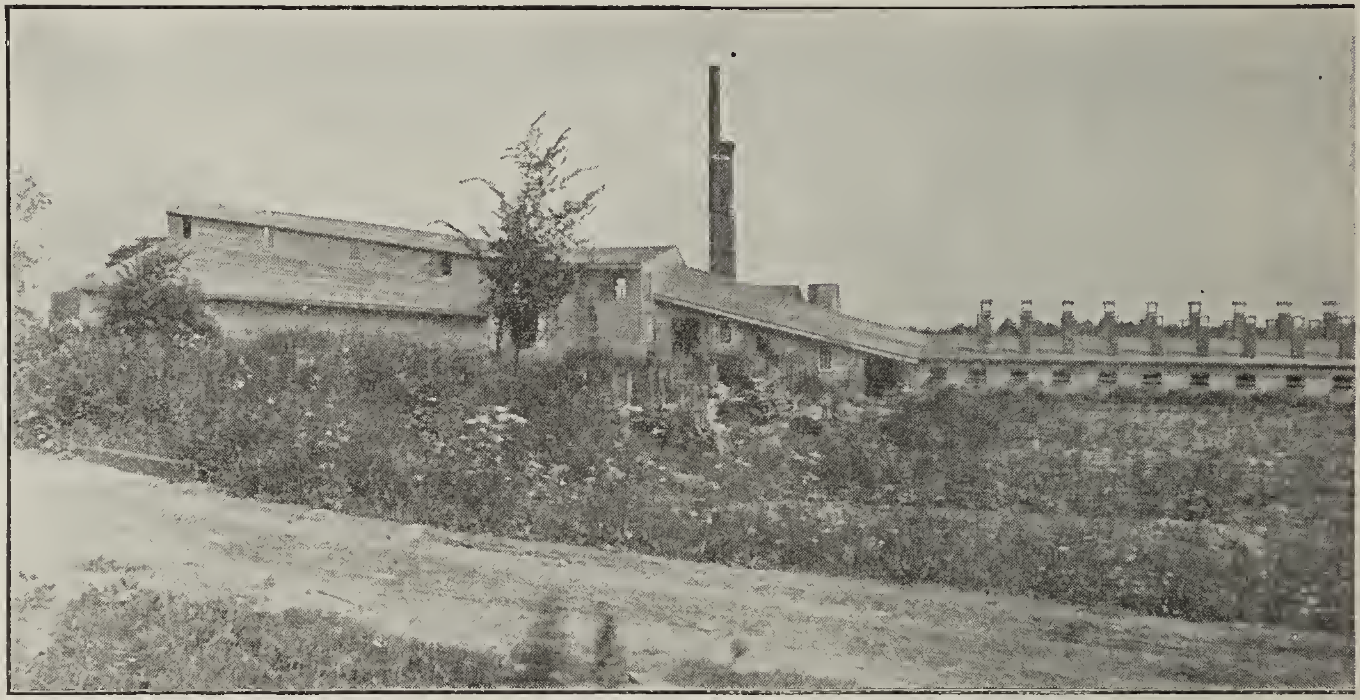


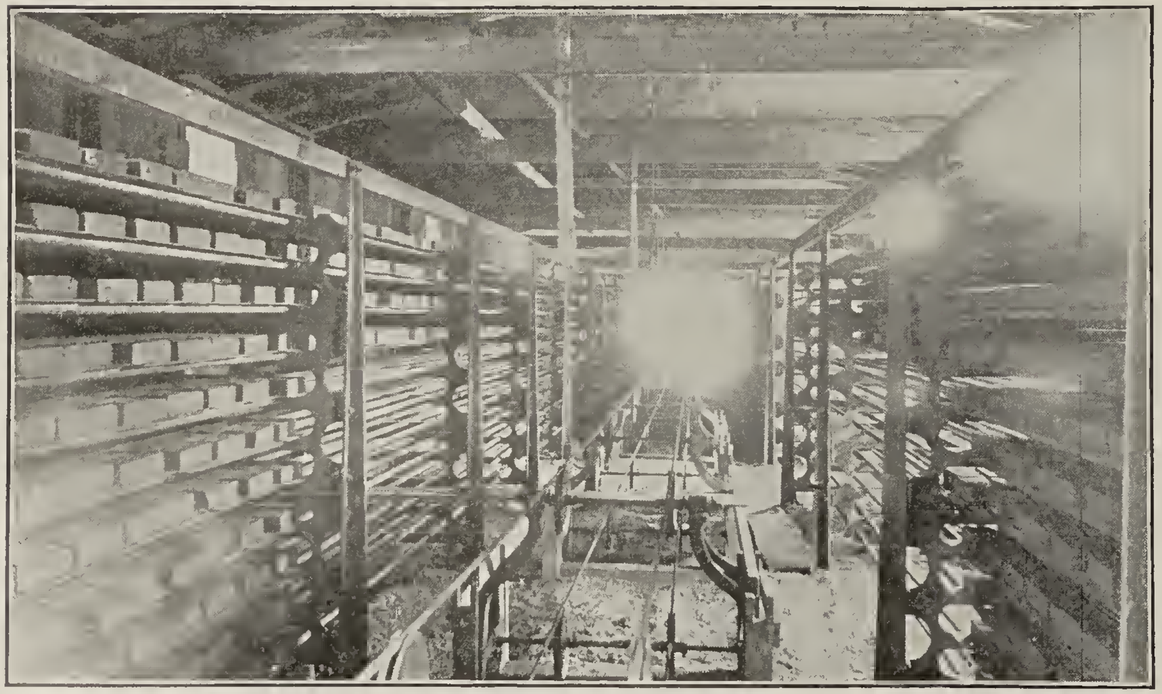
Front View, Showing Brick Machine, Cable Conveyor, Sander, etc.

MAKING BRICK IN JERSEY.

ONE OF THE best arranged and most complete brick plants in operation in the East is that of the Standard Brick Company, at Mountain View, N. J. This plant is located on the line of the D., L. & W. railroad, and is operated by prominent business men of Newark, N. J. Every labor-saving contrivance known to the craft has been installed on this plant, and they are producing a brick which is equal to any common red brick placed on the market today. On the extreme left of the accompanying photograph, showing a general view of the plant, is seen their clay storage shed. This shed is equipped with Lidgerwood hoisting drums, and is arranged to hold a supply of clay to run them through the winter months. A car system is used for conveying the clay from the clay bank direct to the granulators, from whence it is passed into a disintegrator, through the pug mill and into the brick machine. The brick machinery in use was furnished by the Henry Martin Brick Manufacturing Company, of Lancaster, Pa.

A Modern Plant For Making Common Building Brick And Its Equipment.





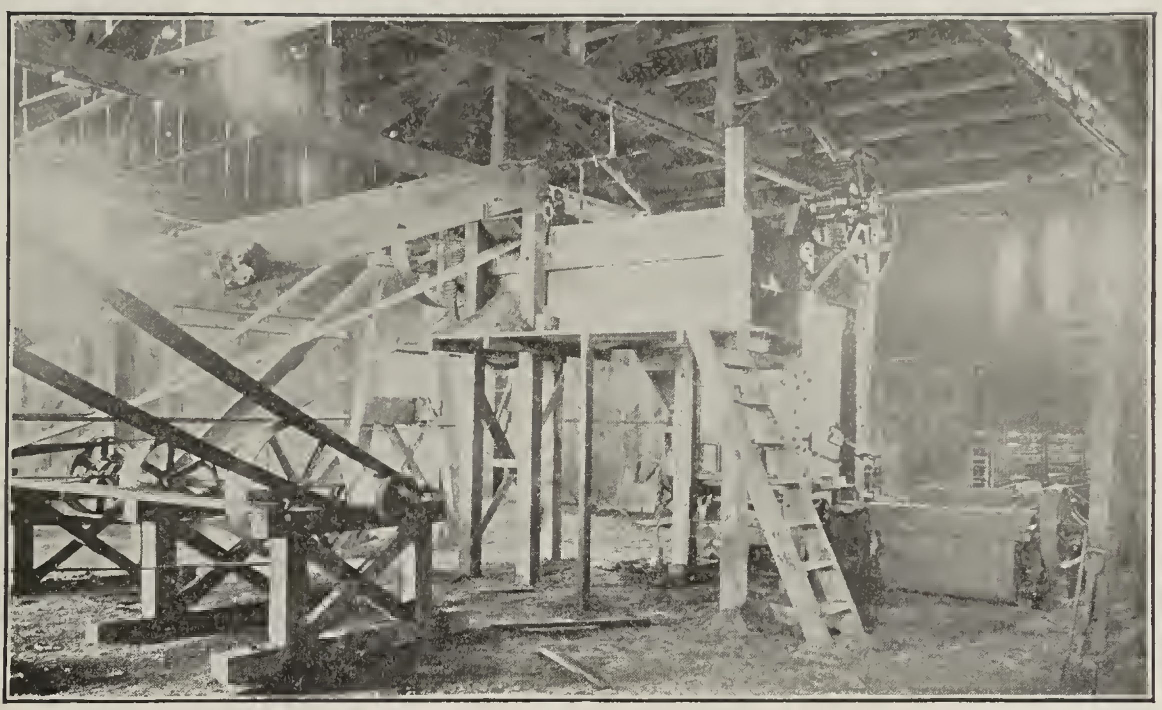
Interior View of Dryer Building—"Martin Patent System."

After the clay has been molded into bricks, it is dumped on the Martin cable conveyor, with which it is conveyed to the Martin patent steam rack dryer. The brick are dried in ten hours, with approximately 2¼ tons of coal; and the brick made today are taken out of the dryer tomorrow morning and set in the

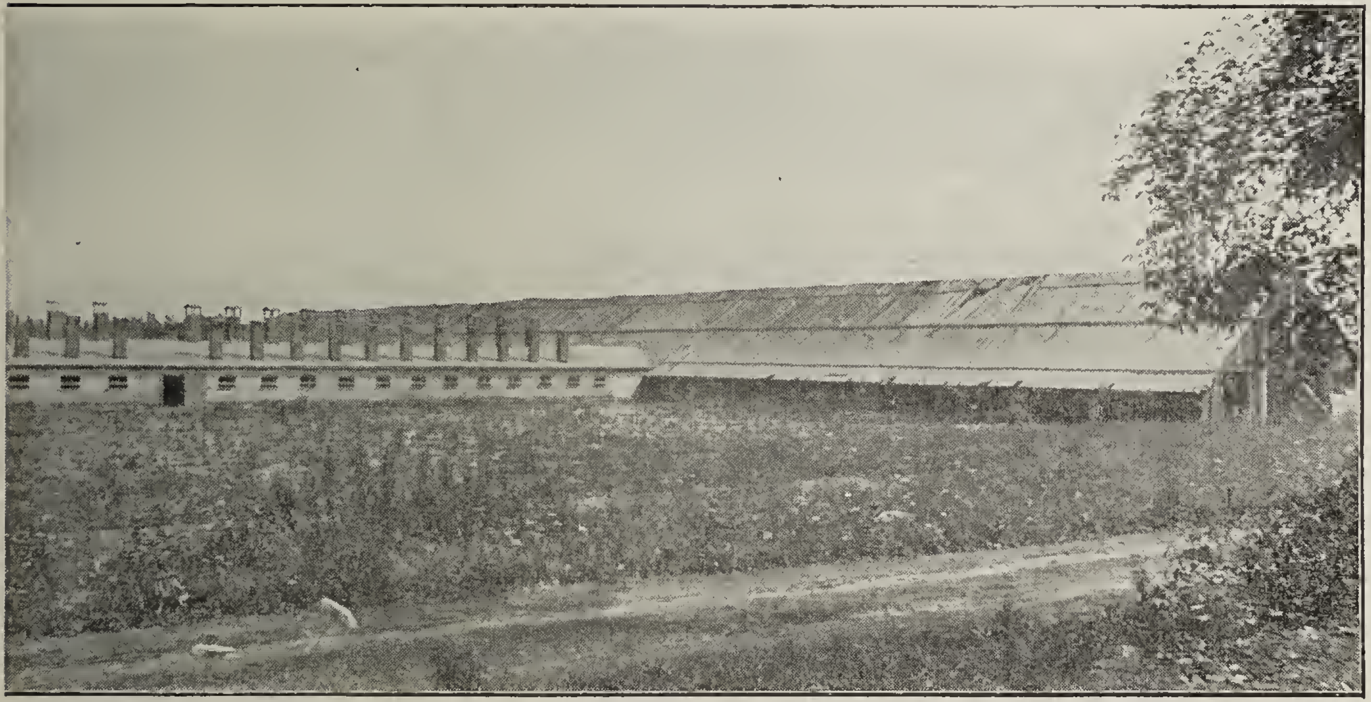
Best Building Brick Manufactories.

kiln ready for burning. The method of burning brick here is that used extensively throughout New Jersey and on the Hudson river, the large clamp kilns holding as high as 1,000,000 brick being burned at one time, with splendid results.

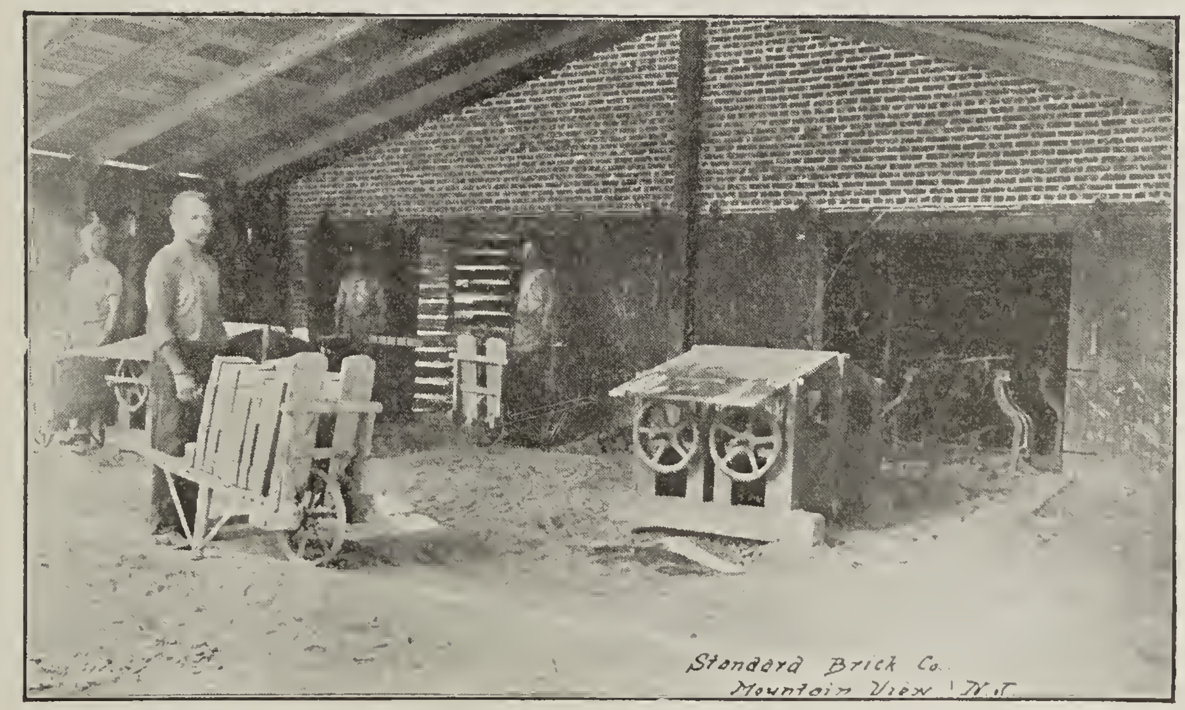
From the kiln the brick are wheeled into cars for shipment to various points throughout New Jersey, a railroad switch running the entire length of their kiln shed. The feature of this plant worthy of mention is the construction of the buildings. No expense has been spared to make them what buildings on brick plants should be. Combining the features of splendid buildings, economical operation of brick machinery and dryer, and magnificently constructed kiln shed with all economical facilities, the Standard Brick Company have a plant that they may well be proud of. It certainly is an interesting plant for an investigating brick man to examine.



Rear View Showing Pug Mill, Clay Conveyor, Sander, etc.



General View of the Standard Brick Company's Factory, Mountain View, New Jersey.


Standard Brick Co.
Mountain View, N.J.

Rear View of Dryer Building—Taking Dried Brick to Kilns.

A MODERN MOTTO.

When trade is slack and prospects glum,
Advertise!
When overstocked, to make things hum,
Advertise!
In seasons dull don't sit and dream
About some hot-air, get-rich scheme,
Get up and hustle on this theme—
Advertise!
If you'd have people know your store,
Advertise!
Tell 'em that you've got goods galore,
Advertise!
Don't mope and let Hustle & Grow,
Who advertise, get all the dough.
Adopt the magic word below—
Advertise. —[Ex.

Ceramic Industry Statistics.—According to a bulletin recently issued by the Prussian government, there were in Prussia in 1905, 15,963 factories in the ceramic industry, including clay mines. The number of employes was 473,293, of which 34,050 were women, 20,929 boys and 294 children.—Deut. Topf. & Z. Z. No. 33, 1906.

* * *

Clayworkers' School in Znaim.—According to the yearly report the total number of students for the year 1905 was 47. The special courses were taken by 19, which brings the total up to 66. The drawing school has 142 students. The ceramic industry is very well pleased with the results obtained by the school, and nearly all students find good jobs.—Deut. Topf. & Z. Z. No. 66, 1906.

* * *

To Prevent Glaze from Settling.—One of the main difficulties with glazes is that some materials, used in compounding the glaze, will settle to the bottom, which makes it necessary to stir the glaze quite often. When possible, in order to prevent this settling, we can increase the plastic clay contents with two or three per cent. Another good remedy is to frit only part of the glaze mixture and add the other part in raw condition. Sometimes a small addition of dextrin or flour will prevent the settling of the glaze. However, one of the best remedies is the use of about 5 per cent. of carbonate of ammonium added to the glaze. The glaze will not settle at all, and all glaze materials remain good in suspension.—Keram. Rundschau No. 32, 1906.

* * *

The Air Leaking of Kiln Walls.—This subject was discussed in a very interesting article. The leaking of kiln walls is not considered very often from an economical standpoint. In most cases the kiln walls are only periodically repaired. Very seldom are cracks washed over with some clay slip. In building new kilns it should be made a point that the filling between the fire brick wall and the outside walls should be of very good material and properly laid. The use of sand has proven very good, as it will run in all little cracks and prevent air leaking. If the air leaking is considerable the fuel bill will be very much higher than it should be, and only a very thorough repair will cut this fuel bill down. The inside lining of kilns should at least once a year be washed with a mixture consisting of fire clay with the addition of some soda or salt, in order to protect the wall from cracks. Such a slip mixture will get in all cracks and prevent air leaking to a very great extent.—Deut. Topf. & Z. Z. No. 66, 1906.

* * *

Wedgwood Pyrometer Scale.—In reply to a question how to figure the Wedgwood scale into degrees centigrade, we find that the Wedgwood scale gives too high temperatures. Wedgwood took the standpoint that clays would shrink in high temperatures at the same ratio as they shrink at low temperatures. When the temperature difference between 800 and 1000 degrees centigrade was 3 degrees Wedgwood, he would take for every further raise in temperature of 200 degrees, 3 degrees more on his scale. We know, however, that this supposition is not right, as clays do not shrink in proper ratio. However, for these reasons Wedgwood did get a very high temperature for his scale, and 130 degrees Wedgwood equal 1000 degrees centigrade. We find, therefore, in many books that the Wedgwood degree is equal to 73 1-2 degrees centigrade. Le Chatelier, however, has proven, according to his book on the "Measurement of High Heat Temperatures," that 132 degrees Wedgwood was only equal to 1550 degrees centigrade. He compared an old Wedgwood pyrometer with an air thermometer, and in that way found the above results. A proper refiguring of the scale of Wedgwood pyrometer can hardly be done today, because the manufacturing of Wedgwood pyrometers has changed considerably, as far as the clay materials are concerned.—Tonind. Z. No. 86, 1906.

* * *

Fire Clay Products.—The fire clay product industry in Germany is somewhat more complicated than in this country, as the manufacturers pay much closer attention to the direct mixtures necessary to produce good fire clay product. Mr. H. Shnurpfeil gives, in a very interesting article, some details of the fire clay manufacturing. Four requirements are necessary to determine the value of the product. First, resisting against heat; second, against chemical actions; third, against mechanical action and abrasion, and fourth, against change in temperature. The glass industry requires bricks which in most instances have to fulfill all four requirements. Smelting furnaces must meet three requirements, while bricks for kilns are made to resist heat, and bricks used for generators must meet the requirements against abrasion and heat changes. Grog is mostly used for mixing with fire clay, but in some instances sand is used also in mixtures of even parts. —Tonind. Z. No. 96, 1906.

* * *

Non-Breakable Pottery.—A new German patent has just been granted to Heller & Baumgartal, of Teplitz, for the combination of metal and pottery by which cooking utensils will become non-breakable. The procedure is described as follows: The pottery is made in the regular way, with the exception that it is only glazed on the inside. After being burnt, an enamel coating is put on the outside, consisting of three parts of copper, two parts brass and one-eighth part gold, mixed with borax. This mixture is subjected to a heat of about 1200 degrees Fahrenheit. After fritting, this frit is mixed with one part borax and one part of any commercial enamel, and applied on the burnt pottery, and burnt to about 800 degrees Fahrenheit. After cooling, the pottery will have a metal coating on the outside, and the ware is now put into a galvanizing bath; the metal coating then can be made any thickness. It is claimed that pottery so made is practically indestructible.—Deut. T. & Z. Z. No. 65, 1906.

ARE WE A COURTEOUS PEOPLE?

"Are we Americans as courteous in all our relations of life as well-disposed visitors occasionally think us? Are we as courteous as mixed blood, equitable laws, and a prevailing sentiment of self-respect might be reasonably expected to make us? Do we not sometimes confound issues, confuse disinterestedness with politeness, and believe that, because good breeding comes from the heart, all good-hearted people are consequently well-bred? Yet there are men and women who stand ever ready to help their fellow-creatures, and who are seldom or ever polite to them. Dr. Johnson was one of the kindest of men, but of that courtesy which respects the feelings as well as the rights of others, he had never the faintest perception. "Now what harm does it do a man to contradict him" he used to say; and contradiction was the guiding principle of his talk. It is a guiding principle with people of much less intelligence today, and it gives to conversation a rough acerbity, destructive alike of pleasure and persuasiveness. It is supposed to be a masculine prerogative, but, like other masculine prerogatives, has been usurped by an advance guard of women."—Delineator.

"IN PERPETUUM HOMINUM MEMORIAM"

FIRST OF THE FIVE
BOOKS OF
KRUHADHARA'S
REVELATIONS

EVULGATED
IN COLLABORATION BY
E.V. JOHNSON AND
F.W. FITZPATRICK

(CONTINUED FROM SEPTEMBER, 1906, ISSUE.)

"It is only a question of time when this fearful mass of misery, increasing like the capital of the country, at compound interest, will become unendurable. We can end it, of course, when we choose—end it instantly and at one stroke. We can end it just as a man on a railroad track pursued by a train can end his agony by stepping to one side and letting the train go by. When he has once done it he will mop his brow and wonder why in the world he had not thought of it sooner. We will end it in this case by redistributing the wealth of society, by the elimination of excessive profits, by curing our economic apoplexy, and at the same time we will make sure that the dread disease never returns, by putting the economic power of the country where the political power is still supposed to be—in the hands of the whole people, to be administered by the whole people for the good of the whole people."

(From le Temps, Paris, November 8, 1916.)

. . . The election of the Progressist candidate surprised no one in America, nor anyone of us Europeans who may have kept pace with events in that country. It was conceded long ago, but that the electoral college showed a plurality of 340 votes in his favor was astonishing, though even that but goes to show how very popular Mr. Manning has become.

Unquestionably the new administration will accomplish some great reforms in all the branches of the government service and even in the people's ways and manners. Such radical changes could never be accomplished without a complete upheaval, if not indeed a revolution, were it not that the people—as well as the leaders, and even the rich—apparently approve and endorse every move made by that wonderful man. The President-elect seems to be the popular hero of the century, his ideas and theories are even taking root in our country. . . . Among the other things he proposes are that the state or the municipality own and control all means of transportation, the public markets, the lighting plants . . . and that it even assume control of funerals and dispose of the dead by an entirely new system!

(From the Montreal Star, Saturday, August 18, 1917.)

. . . One by one the startling reforms that were advocated by our new President while he was in Congress are being inaugurated, and that, too, without any friction or clash with opposing forces. Opposition to him seems to melt away as if by some magic touch. In other times and countries not one quarter of what has been changed here already could have been accomplished without years of revolution and bloodshed. While by a strange coincidence no one party has what can be called a working majority in the Senate his own party (the Progressists, to which five of our Canadian Senators belong) could be absolutely swamped by any combination of the others, yet every bill sent up by the solidly Progressist House that is known to have his approval and every suggestion made by him to the Senate is passed by that body with surprisingly little adverse comment. . . . The strange thing about it is that no one has flung the word "Imperator" or "Dictator" at him. His wonderful knowledge, foresight and true grasp of conditions, proven honesty and undoubted sincerity command obedience and respect, while his modesty of demeanor, friendliness and magnetism of manner win him over those who intend to oppose him. . . . The London Truth aptly says of him that he is the "Moses of America who will lead the people out of the bondage into which they have sold themselves and also, it is to be hoped, away from even the temptation to again worship the golden calf." . . .

(From the Duluth (Minn.) Herald, Monday, February 11, 1918.)

. . . We have seen our entire financial system upset and changed about, and that almost, one might say, between night and morning, but by some, we are tempted to call it, supernatural management on the part of the President and his lieutenants in Congress and in the financial world, it was done without disturbing the even trend of our ways, our internal commerce or our relations with other nations, without even the suggestion of a panic. . . . The management of our territories, our distant colonies, Canada that has so lately come into the fold, and the southern countries over which we exercise suzerainty that amounts to virtual ownership, has likewise been completely transformed. No one in all these broad lands is now governed without having a voice in that government, the Constitution, that document which had almost been forgotten, is now the basis, the text-book, the word and spirit of our rule. . . . All these reforms, each seemingly a little more radical than the last, and some upsetting absolutely every preconceived idea of government and departing from every precedent of recent times, have slid into place without a riffle or disturbance. In fact, metaphorically, the waters are even more placid than they ever were. There is absolutely no agitation among the people, and capitalists realize that they are facing the inevitable, so, instead of protests and opposition, are actually taking the lead, and with alacrity, too, in acquiescing to these commercial and social reforms, honestly, or from motives of policy, contending that what helps the people is also best for themselves, and that they would have been glad to do as the laws now ordain they shall years ago only for the fact that some would have been less conscientious and, as things were, they, "the wicked ones," would have been able to sweep everything into their own greedy maws; they, "the good ones," had only been wicked in self defense (?). . . .

(From the Washington Conservative, Sunday, June 23, 1918.)

. . . This latest change from the usual and correct way of doing things is a bit incomprehensible to us. We do not see what is to be gained by it. There may be some argument in favor of it from an hygienic point of view, but even that is not a very impressive one. It seems to us that it is merely an itching, an unconquerable desire to change things. Our new President has had his head completely turned by the success that has attended his many, and we grant, sensible reform movements, but it now seems as if to sustain his reputation as a reformer and to parade his power, he has to interfere with everything; nothing is sacred to him. . . . We congratulate the State of New York upon the fact that one of its Senators and three of its Representatives had pluck enough to oppose this sacrilegious and insane handling and playing with the dead. . . .

If incineration, in place of burial, is a sanitary necessity, then make cremation compulsory, but let the bereaved family do what it will with the ashes. . . . All this State interference with our rights and customs, this lugubrious farce of building monuments of our bodies is impious, nonsensical, cruel and can only serve to convince the people that they have indeed fallen into grievous times and into the hands of a most tyrannical master who masquerades, the wolf in lamb's clothing, under the guise of a kind leader and true friend. . . .

(From the Chicago Chronicle, Monday, June 24, 1918.)

. . . It is rather a sad commentary upon the intelligence and progressiveness of the one-time "Empire" State to note that the one opposing vote in the Senate, and three of the opposing seven in the House, to the new law regulating the disposal of the dead and making an appropriation for the national monument at Washington were cast by New York. . . . The newspaper loudest in the villification of President Manning's noble motives, and which opposed this legislative action most ferociously is a Washington organ of a New York syndicate. Every State in the Union, including New York, has by a splendid majority signified its heartiest approval of this reform, and most of them have already appropriated sufficient sums to carry out its provisions. . . .

(From the Washington Post, Monday, June 24, 1918.)

. . . The laws which have just been passed by Congress, and the several State and municipal enactments that regulate the whole matter, are in perfect harmony, the Conservative to the contrary notwithstanding. There will be no conflict of authority, as that paper predicts. President Manning has had this idea for years, and as far back as 1903 had scientists and experts working out its details. When he submitted the proposition to Congress and to the States it was a fully developed plan that he offered, with all the minutiæ of how to do it, when to begin, and all the details perfectly adjusted and prearranged to permit of its smooth operation. Yet, to absolutely assure that it is a popular law, he, with the consent of Congress, now proposes the very great innovation of submitting the measure to the people before it becomes operative. . . .

(From the Official Bulletin, October 10, 1918.)

By the President of the United States of America:

A PROCLAMATION.

It has pleased the Supreme and All-Ruling Power to bring the American people in safety and honor through many trials and to a fuller knowledge and realization of their obligations toward others and toward themselves, and now, in accordance with the true spirit and intent of the Constitution, that sublimely devised guide for the nation written by our far-seeing forefathers, it is seemly that in a matter that has been brought to the attention of the representatives of the people in legislatures assembled, a matter in which every citizen must be vitally interested, to-wit: the bill known as that "For the Final Disposal of the Dead," each individual citizen should have an opportunity to fully express his views and desires; now, therefore, I, Stephen Manning, President of the United States, do hereby appoint and set apart Tuesday, the tenth day of December next, as the voting day upon the said bill, when every citizen, male and female, over twenty-one years of age and qualified to vote under existing laws and restrictions, shall be entitled to record his "yea" or "nay" as to whether the conditions of this bill, already passed by both houses of Congress, shall be made operative or not.

In witness whereof I have hereunto set my hand and caused the seal of the United States to be hereunto affixed.

Done at the Executive Department, this tenth day of October, in the one hundred and forty-second year of the independence of the United States.

By the President:
STEPHEN MANNING.

ALEXANDER JEFFORDS,
Secretary of State.

(From the Cincinnati Enquirer, Wednesday, Dec. 11, 1918.)

. . . As in everything else suggested by the President and submitted to Congress or to the people, approval has been given his plan by simply an overwhelming majority. In the election just held there have been more votes recorded than at any previous election, yet never have there been so few dissenting votes, the total number of the latter reaching to but 20,000, while the total vote reached 18,216,004. It is rather significant that the number of dissenting votes should exactly equal the total membership roll of the National Undertakers' Association! . . .

(From the Boston Pilot, Saturday, December 14, 1918.)

. . . This matter (the proposed new manner of disposing of the dead) was taken up by our cardinals with the sacred college at Rome several months ago and prior to the late elections Catholics were notified from every pulpit in the land just what the attitude of Mother Church was on the subject. In 1886 cremation was forbidden by the Roman Catholic Church, and the principal reason which prompted Leo XIII to prohibit it was the fact that incineration had been adopted by the atheists of continental Europe as a feature of their funeral rites for the special purpose of giving public expression to their disbelief in the doctrine of resurrection. Moreover, interment has been, so to speak, consecrated by usage ever since the foundation of the Christian faith; but the conditions are such to-day that the Church has given its freest and fullest consent and approval to the new mode suggested, and every Catholic was notified that he could vote according to his own conscience and that the Church saw no objection to the proposed innovation. . . . The Episcopal Church, the Lutheran and other Protestant sects that have canonically prohibited cremation have also signified their approval of this most novel, yet eminently fitting, reasonable and respectful disposal. . . .

(From the Des Moines Sentinel, March 24, 1920.)

. . . The Court of Citizenship of the State of New Jersey is the first to be called upon to settle a really troublesome, momentous question arising under the new order of things. Its decision is a splendid vindication of the theory evolved by the President. It marks one of the most drastic steps we have taken towards the overthrow of the pernicious power of wealth and will be a noble precedent for the other States. . . . When Bernard Z. Donelson, the great millionaire shipper and philanthropist, died his family and his friends did all that human power could do to have his body sent to Washington for final disposal in the National Monument, and, indeed, the claims that they advanced and the arguments presented in favor of that disposition were weighty and founded on fact. Many Senators and men high in the councils of state added their names to the petition that was filed with the documentary evidence before the court. He had endowed colleges, he had established social settlements for the poor, his services to the State and to the Nation were many, and his charity and public benefices amounted to over $160,000,000. Yet the court has decided that his mode of life, his morals, his real citizenship were not such as it would hold up to the emulation of the young, and therefore he was not worthy, despite his great benevolences, that it should place his name before the federal tribunal as being one who should be entombed in the National Monument; his place is to be among those who have done but little for the State of New Jersey, let alone the Nation, in the State Repository; the court even adding that had it not been for the mitigating circumstances, the redeeming feature of his charities and other public works, his memory and body would have been condemned to oblivion! . . .

In time these Repositories, the "White Cities of the Dead" will grow to resemble Damascus of old.

(From the Philadelphia Record, September 15, 1920.)

. . . Congress has revived an old custom in deciding that the Commission to design the great National Monument would be awarded to the artist who carried off the prize in a competition open to all the architects and artists of the country, . . . the judges will be selected from this country and from among the highest authorities in Europe. . . . The successful competitor will be given an absolute direction of the work, and for life, at a salary of $30,000 per annum, a home in Washington and many other perquisites. . . . $8,000 will be paid to each of the ten architects deemed to have the most meritorious designs. . . . There is no restriction as to the character of the design, except that it shall comply with the general scheme already decided upon as to the terraces, the vaults and corridors for the filing of the mortuary and Government records and that every body, or rather block, incorporated into the structure should be accessible and the name of the deceased visible. It is to be on such a colossal scale and of such workmanship and imperishable material that its absolute permanency is beyond any question, and the competitors are informed that the United States Government desires to have the most beautiful and grandest conceptions submitted, absolutely regardless of the expenditure their construction would necessitate. . . ."

(From the Washington Post, September 2, 1921.)

. . . Viewed from one aspect, the award in the great competition is disappointing. It was hoped that our artists had made great strides in the past few years and that there were men, young men, among them who were the peers if not the superiors of the artists of any nation and any time, and to one of them would fall the palm and the glory of designing the greatest work ever confided to an artist. The victor, instead of being one of these, is a man past middle life, an American but by adoption, who submitted a design not even specially made for this purpose, but a composition put on paper very soon after the great World's Fair at Chicago in 1903, a design he then suggested to commemorate the Nation, calling it the "Beacon of Progress." That design is well known, it has been on exhibition in all parts of the world, it received a gold medal at the Paris Salon, way back in 1900, and one would think that the younger men, with this design before them, might have done something that would exceed it in beauty, or that Mr. Despradelle himself could have in some way improved upon it in a design specially made for the present purpose. But all the greater glory is due him that things are as they are, and the superiority of his superb composition over any and all of the thirteen hundred and twenty designs is patent to even the most untrained layman. The jury not only awarded it first place, but have virtually apotheosized it by placing it in a class all by itself, away and beyond anything else submitted. It is stated that at no time in the deliberations was there anything but perfect unanimity as far as that award was concerned.

Mr. Desire Despradelle was born in Burgoyne, France, May 20, 1862, and studied art in the best schools of France. He carried off the highest honors in all his classes and won the grand prize of Rome in 1889. The French Government has virtually showered honors upon him, and also offices. He has been Inspector of State Buildings, official architect, etc., etc., and the original drawings for this very monument were purchased by the French Government for the Luxembourg gallery. He came to this country in the early '90s, and has been Professor of Architecture in several of our Institutes, has practiced architecture in Boston, became architectural advisor to the Federal Government in 1910, and represented our Government at the art conventions of Berlin, 1912, St. Petersburg in 1914, and Vienna, 1916. . . ."

(From the Yokohama (Japan) Patriot, April 8, 1925.)

. . . Prof. Shotaro Mutsu has just returned from a four-months' sojourn in America. The Professor is a member of the Asiatic Commission that was organized by the Japanese, Manchurian and Siamese Governments to study and report upon the innovations and reforms in social and governmental matters that have been effected during the past few years in America. . . . He is particularly enthusiastic over the manner in which the Americans dispose of their dead, a subject to which he has given much study for several years past, having been directed by our Government to devise improvements over our present methods. . . .

(Monday, April 13, 1925.)

Prof. Mutsu's lecture last night, given before the Yokohama Civic Reform League, was the most interesting of the series. It was profusely illustrated by magnificent chromoscope views, taken by the official artist to the Commission, many of which it is our honored privilege to reproduce. We quote the learned professor:

". . . To us the whole scheme was a revelation, a series of astounding surprises. It is difficult, indeed, to give you even the faintest perception of the extraordinary system we there investigated in the short time we can be together. I should like to linger with you and describe the details, the minutiæ of management, the grandeur of the monuments, the impressions, the awe with which one approaches those great tombs, built of the dead to the dead and as memorials to the Nation's progress; but even had we the time I fear I would fail in my effort, for to do the subject justice would require the skilful touch and the glowing word painting of an artist poet.

[TO BE CONTINUED.]

NEW CLAY TESTING DEPARTMENT.

THE NEW Clay Testing Department of the American Clay Machinery Company, Bucyrus, Ohio, is nearing completion. So great has become the demand upon this department of the American company that it was found necessary to separate it from the main factory building and it has been located at the southwest corner of the factory grounds. The building is a commodious one, with sufficient room to accommodate a full line of machinery for making the most accurate tests of all clay by any process known. There are dryers and kilns in connection with this building. The big brick stack furnishes draft for both dryers and kilns. The department will be in charge of Mr. Fred Steel and will prove a most interesting and helpful place for visiting clayworkers to visit. Clay is received in this department daily from all parts of the United States, Europe, Asia and Africa. In fact, there is scarcely a remote corner of the world from which clay has not been received. The advantage of knowing in advance what a clay is good for is recognized as an insurance of success and the clay testing department of the American company has grown accordingly. The new building is 100x150 feet, with room for further extensions when demand requires.

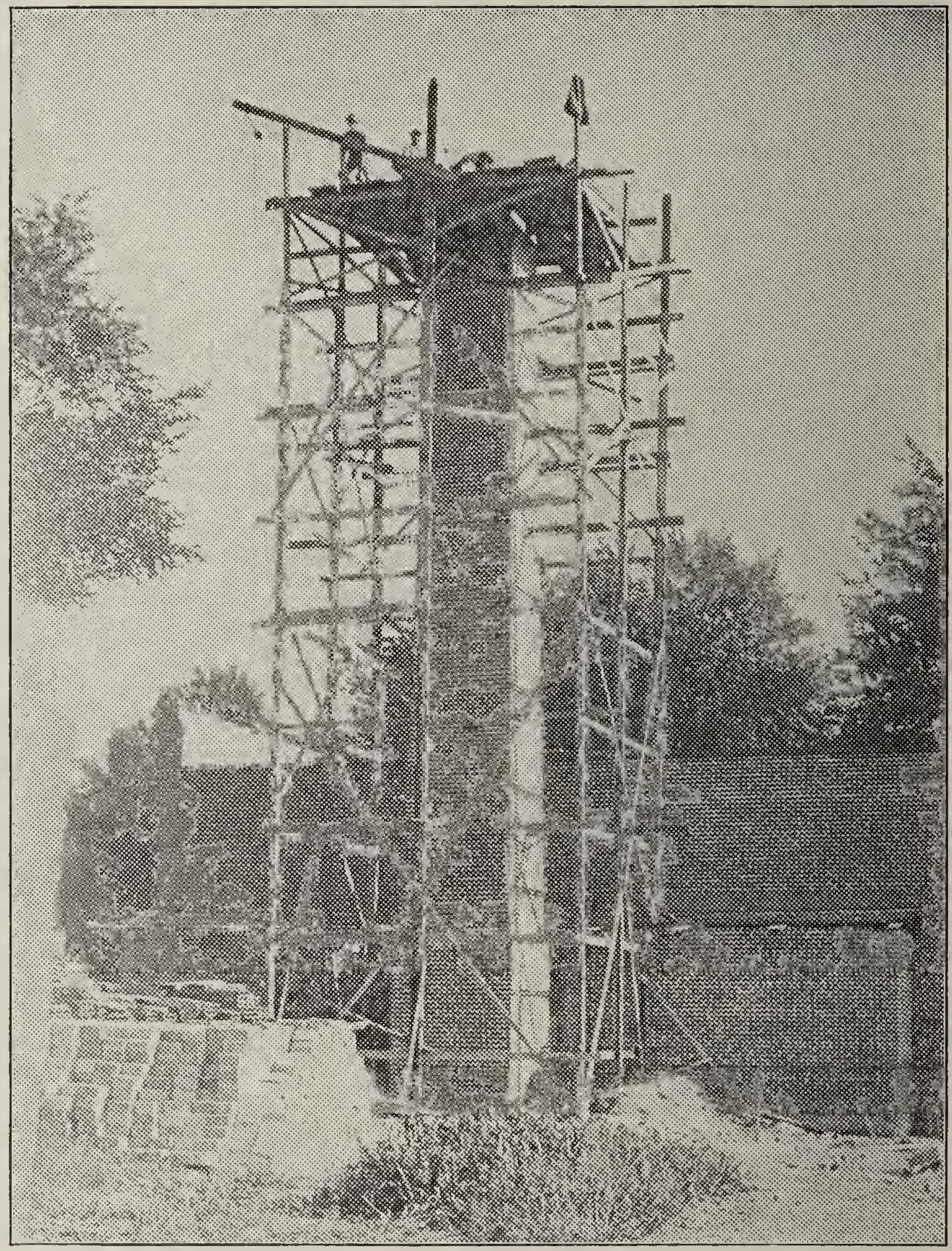
REINFORCED BRICK WORK.

IT MAY not be possible for San Francisco to build as extensively as it should do of reinforced concrete, for unfortunately there are too few builders familiar with its uses, but there is one closely allied method that its builders should know. I refer to reinforced brick work. Broken stone for ordinary concrete may be difficult for them to obtain, but the bricks are there on the spot, and the steel wire or plain steel rods can be quickly gotten. No expensive lumber false work is necessary, and by the addition of the steel an eight-inch wall will be better and stronger than the plain brick work of twice that thickness, and for curtain walls a four-inch wall would be better in many instances than one of eight inches.

It is evident that the city could save millions of dollars and months of time by building intelligently with the materials at hand, providing it can break away from obsolete methods and the unyielding building laws founded on those methods.

Major Stokes-Roberts, of the Royal Engineers, has put up some remarkable examples of water tanks in reinforced brickwork for the British government. He uses light brick walls with telegraph wire reinforcement to stand the thrust of tons of water. He makes a nine-inch reinforced wall do what no plain twenty-inch wall would do with safety without the steel, and he suggests the use of still lighter masonry. It is the principle of the wire-wound gun applied to brick work. The walls are laid up in cement mortar like any ordinary wall, excepting that wire ties are left projecting from the joints, and to these are bent light rods or wires along the surface of the brickwork.

Over this steel network a coat of cement mortar is placed, and the result is practically a reinforced concrete wall. Such a wall could be bulged or twisted by explosion or earthquake, but it could not collapse. It is knitted together and to the



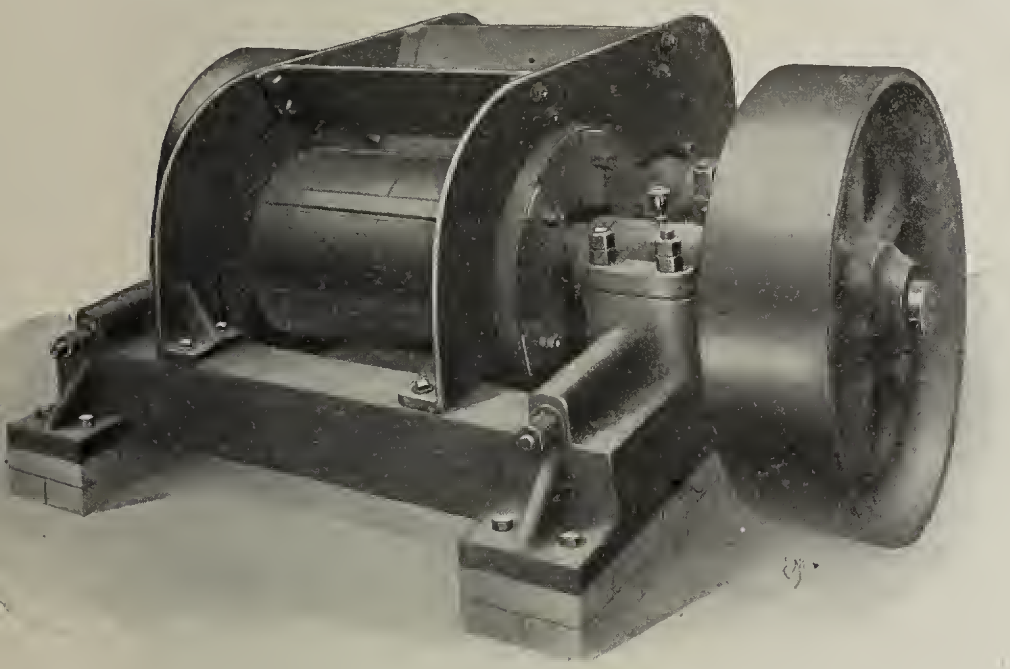
Brick Stack for Dryer and Kiln of the American Clay Machinery Company's Clay Testing Department.

floors and columns with steel stitches that will not rip, and the most important of all just now this work can be done by the ordinary mechanic employed by any careful builder. Like a sailor's knot this wirework is easily done, but hard to describe. The result is a wall that will defy fire, water, earthquake, and the tooth of time.—Robert W. Gardner, in the Architect and Engineer of California.

"THE MARTIN PATENTED DISINTEGRATOR."

THE ILLUSTRATION herewith shows the "Martin" Latest Improved Disintegrator, patented March 1st, 1904, which the manufacturers, the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pa., say is the best and most complete of the popular type machines for disintegrating clay; it is heavily proportioned, neatly designed and put up for strength and durability.

You note in this disintegrator that the cutter bars are constructed so that they can be conveniently applied to or removed from the cutter-carrying roll. The cutter is cross shaped and has a plurality of cutting edges, shown as four, and as an edge becomes dull in use, the cutter may be withdrawn endwise from its roller and turned partially about, and instantly reinserted in the groove from which it was withdrawn. This avoids a necessity of regrinding the cutter bars; the cutter has four cutting edges, either of which may be used, and their edges may be exposed for use one after the other, as they can be turned partially around on the roller with a fresh and sharp edge for use.


The Martin Patented Clay Disintegrator.

The cutting-carrying roller comprises a shaft on which are keyed two hollow metallic sleeves or hubs, said hubs having outwardly extended flanges, the flanges outside of the hubs having made through them several cutter-receiving openings of cross shape.

The two parts of the roller are keyed to the shaft, sustained in suitable large bearings; the cutter-carrying roller has end flanges that extend beyond the periphery of said roller, the clay in passing between the rollers being kept from contact with the shaft and from the bearings.

The disintegrator is fitted up with hopper and includes a large fly-wheel and pulleys of broad-face for driving each roller independent of the other. It is one of the most serviceable and most economical machines of its class.

The man that lays the brick may not get too much money, but he is continuing to add too much, comparatively, to the ultimate cost of brick structural work, and seemingly has not properly digested that well-known manufacturer's axiom that increased capacity should mean lower cost as well as more money for the man that does the increasing.

Written for THE CLAY-WORKER.

BASIS FOR FIGURING THE COST OF DRYING BRICK.

ONE OF THE most elusive problems confronting the the brick manufacturer is to determine the cost per thousand of any one process in preparing his wares for the market. To be sure, when the year's work is done and the plant is shut down for a few weeks of frozen weather, he can take invoice of his stock, prepare a balance sheet and come near figuring the total cost per thousand for making and marketing his product. But just how much of the total expenditure of the year was for preparing the clay and molding the bricks, how much for drying, or how much for burning and marketing his bricks, few brickmakers take the pains to ascertain.

Of course, they know nearly the correct figures in each item of expense, but there are many small matters of expense that properly belong to the various departments of brickmaking that are considered in a general way, but are never charged to their proper departments.

To properly tabulate the expenses of manufacture and to determine the cost of each department is very necessary to the intelligent management of any manufacturing plant.

I shall not attempt to give any method of keeping accounts to properly tabulate the daily expense, so that the cost of each department will readily appear, but shall confine myself to answering the question suggested in the title to this article, viz.: On what basis should the cost of drying bricks be figured—the total amount of ware taken from the dryer, or the amount of marketable product?

Suppose the daily capacity of a plant to be 50,000 bricks. That number of bricks are actually produced and passed through the dryer and on to the kilns. But suppose, again, that only 40,000 are fit for setting to burn, the remaining 10,000 being so badly cracked and broken in the dryer that they are fit only for the rubbish pile. On what basis then should one calculate the cost per thousand of drying bricks in such a dryer?

The basis on which to figure the cost would be the 40,000 bricks that were fit to make a marketable product, but there are many items of expense to be considered in figuring the cost of such drying.

Let us suppose that it takes twenty-four hours to dry the bricks and that it requires a day man and a night man to attend the dryer. We would tabulate the expense about as follows:

Labor for 24 hours	$ 3.50
Fuel	5.00
Value of 10,000 broken bricks	20.00
Labor of disposing of 10,000 broken bricks	3.00
Total cost of drying 40,000 bricks	$31.50
Cost per thousand	$ .78¾

This does not include the wear and tear upon the dryer equipment, nor interest on dryer investment. If due allowance be made for this, the cost of drying bricks in this supposed case would reach near the dollar mark.

There is another item that should be added to the expense of drying in such a dryer. When bricks are so badly damaged in the dryer that 20 per cent. must be consigned to the rubbish heap, there are sure to be many more unfit brick escape the notice of the setter, and these do not show up until they are being removed from the kilns, after the exrta cost of setting and burning has been added.

Often the burner is blamed for the checked and broken bricks when the primary cause lay in the dryer. Failure to adapt the dryer to the clay is the cause of so much trouble in brickmaking that one can not figure the real cost of drying. The burned bricks are so unfit for use that soon the reputation of the plant is seriously damaged, and the actual cost of drying may be bankruptcy.

L. C. MOORE.

Written for The Clay-Worker.

PLANT OF THE CALDER BRICK AND COAL COMPANY, CAMERON, PA.

THIS PLANT is located in the beautiful valley of Hunt's Run, which joins the Sinnamahoning Valley at Cameron, Pa. They own six hundred acres of land, which is about equally divided on either side of the valley by hills about four hundred feet high. These hills contain three different veins of coal; below each vein of coal lies a deep stratum of fine fire clay, while above are inexhaustible quantities of shale. The coal from the upper vein is at present the fuel used by the factory, and is brought from its bed, as is also the shale from the pit, by the simple method of gravitation, the loaded car hauling the empty car back for its load.

The plant in the valley is up to date in every particular. The power house, which is built of brick and isolated from the factory proper, is light and airy and is entirely free from the dust of the machine room. There are three return tubular boilers in the boiler room, each 6 feet in diameter, 18 feet long, at 100 lbs. steam pressure, developing 150 h. p., or 450 h. p. boiler power. A bulkhead separates the boilers from the engine room proper. In this room are the feed and tank pumps. One Hamilton Corliss engine of 300 h. p. drives the factory machinery and during the day also drives the generating set that furnishes the electricty for the fan motor and electric lights. When the large engine is not running, a 40 h. p. independent "Fuller" generating set does the electrical work.

General View of the Calder Brick Company's Factory, Cameron, Pa.

The water supply for the factory is taken from an ever flowing stream of the purest spring water, which wends its way, like a silver thread, between the hills, and past the factory. This stream being rapid and constant in its flow, can, with slight engineering effort, be made to furnish the power for running this factory.

The grinding room is furnished with two nine-foot dry pans. These are easily fed by one man to each pan as the shale is brought by chute from the bottom of the storage bin. The office of the feeder is to see that the supply to the pan is constantly regulated. From the pans the ground shale is carried to the two large "perfection" Dunlap screens by elevators, and then to the hopper which regulates the flow of the ground material to the pug mill. From this pug mill, which is ten feet in length, the material passes to a combination pug mill and brick machine, the largest of the E. M. Freese make. The arrangement of the hopper and the pug mill is such as to insure the thorough and even pugging or tempering of the shale. The result is a bar from the auger machine as nearly perfect as the most ardent brickmaker can wish for. A large sized cutter produces fifteen block size to the cut. These pass to the off-bearing belt and to two Richardson represses, which are so regulated as to easily take care of the entire output of the works.

The dryer, which was built by the Pittsburg Dryer Company, is a ten tunnel structure, with accommodations for fourteen cars on each track. It is built for the waste heat utilization on all ten tunnels and furnace fire auxiliary under five tunnels. The fan operating the waste heat system is ten feet in diameter and is driven by a motor. At the cooling end, as well as at the receiving end of the tunnel, there is room for thirty cars, insuring ample storage margin between the factory and the tunnels, and, at the other end, cool brick for the setters.

In the kiln yards are eleven round, down draft kilns, thirty feet inside diameter. Each kiln is fitted with ten fire boxes, affording ample grate area for their work. The kilns are set in two rows and between the rows runs the waste heat duct, to which each kiln is connected. A convenient system of dampers controls the application of the fan for conveying the heat from the cooling kiln to the tunnels.

As on the hill, in the mine and shale pit, so in the factory tunnels and yard transfer systems, the grade is established that runs the load to the delivery point with the same effort that it takes to return the empty. This makes each load a "one man job."

The company owns its own locomotive which permits the placing of the cars for loading at the most advantageous spot, and at the time it is needed. This results in a great saving of time for the yard crew.

The present product is the vitrified paving block exclusively, but there will doubtless be added in the future the manufacture of the fire brick and high grade face brick, as their supply of material for these products is unlimited.

The company is well along in the construction of a model village. The houses are built of brick and are fitted the same as houses in the large cities, with water, sewer connection and electric lights. Care has been taken especially with the water supply. A reservoir was constructed at the head waters of the stream, which runs across the property, above all possibility of contamination, and is piped thence to the pump suction at the factory site. From the pump and tank the water returns to the village through cast iron pipes. At suitable intervals hydrants for fire protection and convenient use have been installed.

This factory is unquestionably destined to become a prominent feature of the clayworking industry in this section of the country. Its officers are prominent business men, whose success in their past undertakings is a guarantee that the future of this works is assured.

Written for THE CLAY-WORKER.

THE TRUTH ABOUT MODERN CEMENT AND CONCRETE WORK.

Why It Is a Dangerous Material for Builders to Experiment With.

THE ADVOCATES and promoters of concrete and other composition building products point with great gusto to the ancient uses of cement and concrete construction and to those ancient ruins which show the stones crumbled away by the ravages of time, while the cement mortar with which they were laid is still intact. But they fail to remind their would-be patrons that the ancient art of making cement and cement mortars is a lost art. There are several lost arts. The Egyptians had the art of embalming their dead so skilfully that bodies have been preserved almost perfectly for thousands of years, while the most skilful embalmers of today can only preserve the bodies of the dead for a short time.

A New Cut in the Clay Bank.

The ancients knew how to prepare steel blades like the famous blades of Damascus, far beyond the highest skill of the present day. It is absolutely beyond the power of the most skilful dyers to produce anything approaching the beautiful and unfading colors of the ancients. You can find ancient documents written in ink, which today are as bright and clear as when written, thousands of years ago, while the best inks of today fade away and disappear within a comparatively short time.

So it is with cement and cement mortars of today. The ancient art is lost, and highest skill of today cannot produce either cement or concrete at all comparable with that of antiquity. There is every reason to believe that much of the concrete work put in place today is the veriest mud, as compared with the cement of ancient times, to which the advocates of modern concrete point as proof of the indestructibility of their material. Every practical user of the Portland cements of today, manufactured as they all are under such a mad rush for enormous output and quick shipments knows that there is not a single brand which has not at times proved a failure, and that, too, in a most mysterious and unaccountable way. Right there is the danger which threatens to overwhelm with dire disaster the owners and constructors of buildings where concrete is being used so extensively, so ignorantly and unskilfully as it is in a large proportion of the operations of today. Already the harvest is in sight.

The National Builder calls attention to a number of serious failures of concrete construction, namely, the falling of three floors in the Hotel Oswego, which fell last October; a house in Pittsburg belonging to Kaufman Brothers; the Wonderland Theater of Detroit; the Bell Telephone Company's building in Philadelphia; the Paddington apartment house, Chicago; Lawrence Savings Bank, New Castle, Pa. A more recent instance is the collapse of the Garfield Automobile Company's building at Elyria, Ohio, three killed and seven injured. These are only a few of the very large number of collapses of concrete building construction, the number of which is legion. It is almost beyond comprehension that owners and erectors of buildings will rush into the use of a material carrying with it such enormous risks.

The Calder Company's Boarding House.

The use of concrete and other composition building material is being extensively used, not because it is a tried and proved material, but because able, energetic and skilful men who are in business to make money are engaged in advocating and extending its use. Concrete has its legitimate and natural uses, wherein it has proved itself, not an infallible, but a fairly reliable material. But the extension of its uses to other and well nigh all parts of building construction is an experiment, a speculation, a gamble, which is sure to bring calamity to its patrons. A. N. OLDTIMER.

HOOSIER CLAYWORKERS INVADE BUCKEYE STATE.

John A. Dailey and Henry S. Preston, manufacturers of hollow tile at Terre Haute, Ind., have purchased the plant of the Guernsey Brick Construction Company, near Byesville, Ohio. The plant will be enlarged at once and put in shape to turn out hollow block such as the Terre Haute plant produces.

The demand for hollow tile from points in Ohio had grown to such an extent that Messrs. Dailey and Preston decided it was wiser to manufacture the blocks there than to ship them from Terre Haute.

Written for The Clay-Worker.

A CITY BUILDED UPON THE SAND.

Michigan City and Its Brick Plants—How the Sand Dunes of Northern Indiana Are to Be Converted Into Building Brick.

IT MAY SEEM to be contrary to physical and scriptural law, but there is a city "builded upon the sand" on the Indiana shore of Lake Michigan, which is just as enduring as any city builded on a rock. This quaint city is peculiar in several ways. Though in Indiana it was christened Michigan City. Another peculiarity is, that while but fifty miles from Chicago, lying due east of same, on the main line of the Michigan Central Railway, it has never been annexed by it. However, the people of the two cities are very neighborly and visit back and forth frequently, especially in the summer time when a fine lake steamer plies between them. Old residenters of Michigan City are fond of recalling the days when that was the larger of the two cities, but they are not very clear in explaining why they failed to keep pace in growth with the big city across the lake. It is very clear though that it was not for want of "sand." There is such an unlimited quantity of that material there that the irreverent sometimes allude to it as the "Sand City." The lake shore is fringed with great sand dunes which, as they shimmer in the sunshine of a summer day, appear to be little mountains of silver to the eyes of the visitor coming in on the boat.

"Hoosier Slide," a Mountain of Sand, Seen from a Distance.

These sand hills not only add an element of picturesqueness to the sky line, but furnish a valuable and inexhaustible building material, now that the sand-lime brick have come into use. It was because of this abundance of raw material perhaps that Michigan City was one of the first, if not the very first point at which a sand-lime brick plant was started in the United States. The Ohlemacher Brick Company began operations here several years since by making brick by what is known as the German process, using machinery imported for that purpose. Recently a new plant has been established here and as it is equipped with up-to-date American machinery, we are sure that the readers of The Clay-Worker will be interested in a description of it. Thanks to the very able and courteous vice-president and general manager, Mr. G. W. Bostwick, The Clay-Worker scribe was afforded ample opportunity to inspect and study every part and feature of the plant which is admirably arranged. It operates under the rather unusual title of the United States Brick Corporation.

An Up-to-Date Sand-Lime Brick Plant.

The factory is situated but a few blocks from the Michigan Central R. R. station at the foot of the largest sand hill in that vicinity known as "Hoosier Slide," which presumably was piled up there on the shore of the lake by the winds and the restless blue waters long before this country was discovered by Sir Christopher. An excavation was made at the base of this vast sand heap for the site of the factory and now the raw material is wheeled in barrows from the very threshold of the factory.

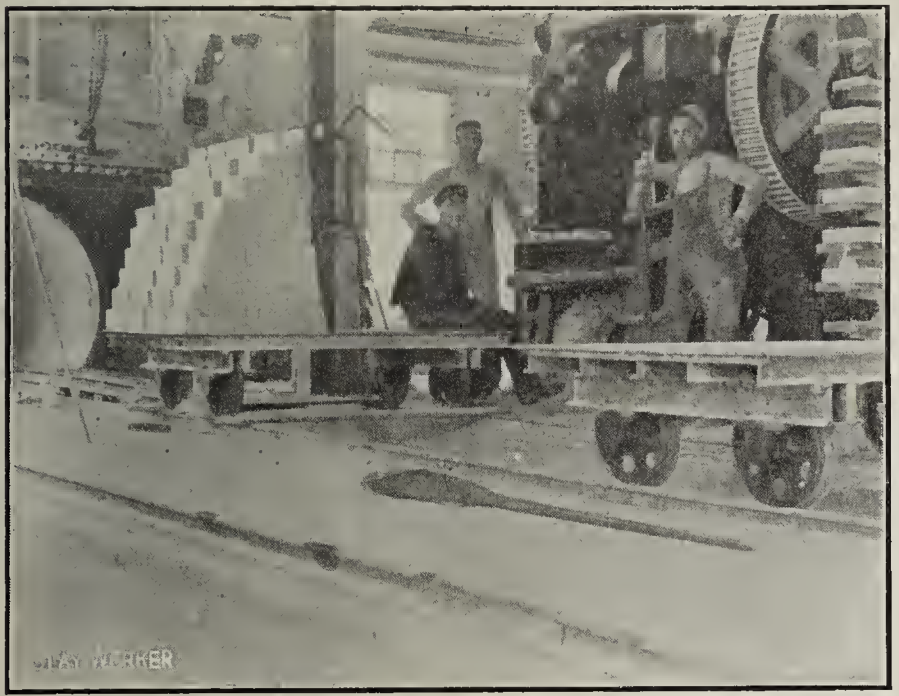
The sand is dumped into a chute from which it is taken up by cup elevators, which carry the partially dry material up to the second floor where it runs into a revolving screen, which frees the material of any stones or troublesome ingredients. The sand is of such a fine texture and contains such a small amount of pebbles or refuse that it is only necessary to clean the screen once every week. The sand sifts through the screen into a large bin, dropping down on coils of steam pipes. The bin is 20 feet long, 8 feet wide and has a depth of 12 feet. There are seven coils of pipe. The top coils are large and far apart, while the lower ones are smaller and closer together. The damp sand falls upon the upper coils and stays there until dry. As the sand dries it drops down between the coils on to the angle irons, which are placed between the lowest coils, and from these slips on down to the bottom of the bin. The

Main Factory Building, United States Brick Corporation.

The Sand Bank Near the Door of Factory.

angle irons are used for the purpose of enabling an exhaust fan to be applied to carry off the damp air without sucking the sand into the air duct. The exhaust pipes are connected to the air duct directly at the rear of the bin separated from the bin proper by a wooden partition. A fan sucks the damp air out through small holes opening under these wedge shaped pieces of iron. The sand is thus easily dried and does not get into the exhaust. From the three foot reservoir at the bottom of the bin the dry, hot sand is drawn off by means of eight pockets, four on either side of the bin, and is taken up to the second floor by means of a chain elevator to the mixing bin.

The caustic lime is purchased from a Chicago factory and hydrated at the plant. It is taken from the cars, weighed in a wooden bucket and dumped into a small car in which it is to be hydrated. These cars are run on tracks under the cars loaded with the brick in the cylinder and the lime is hydrated at the same time the brick are being subjected to a 120 pound steam pressure. The lime after it is hydrated is stored in a large bin which holds enough lime to make 120,000 brick. The bin is kept from one-half to two-thirds full. The lime is taken from this bin by a belt elevator to a funnel shaped hopper from which it goes by gravity to the measuring device. The latter is somewhat similar to the charger of a two-mold dry press brick machine. Sand is fed into this apparatus at the same time, but in a different compartment, enough larger than the lime compartment to properly regulate the proportion of the material to be used. Each movement of this charger carries a given amount of lime and a given amount of sand into a trough through which an auger or worm conveyor runs carrying the mixture to the dry mixer. The latter is in the shape of a bunger about eight feet in diameter. The material is carried to the center by revolving sweeps, and it takes the material only about a minute to pass from the outer edge where it enters to the center where it drops through an opening into a chute from which it is fed into the tube mill. The bottom of the mixer is a steel plate which is kept warm by a steam coil beneath it. This mixer is one of Mr. Bostwick's inventions.



The American Clay Machinery Company's Four-Mold Press.

Piling Out Brick, Using Gravity Conveyor.

The tube mill is one of the largest made by F. L. Smidth & Co., of New York. Flint pebbles are used for grinding. From the tube mill, the thoroughly ground and mixed mass goes to the wet mixer. Here a spray of water is thrown over the mixture as it passes through a pug mill-like conveyor and thence into a sweep tank from which it goes to the brick press beneath. The latter is a four-mold machine made by the American Clay Machinery Company, Bucyrus, Ohio, and with the work of which Mr. Bostwick is much pleased. The spiral conveyor and other similar appliances were furnished by Skillin & Richards Mfg. Co., Chicago.

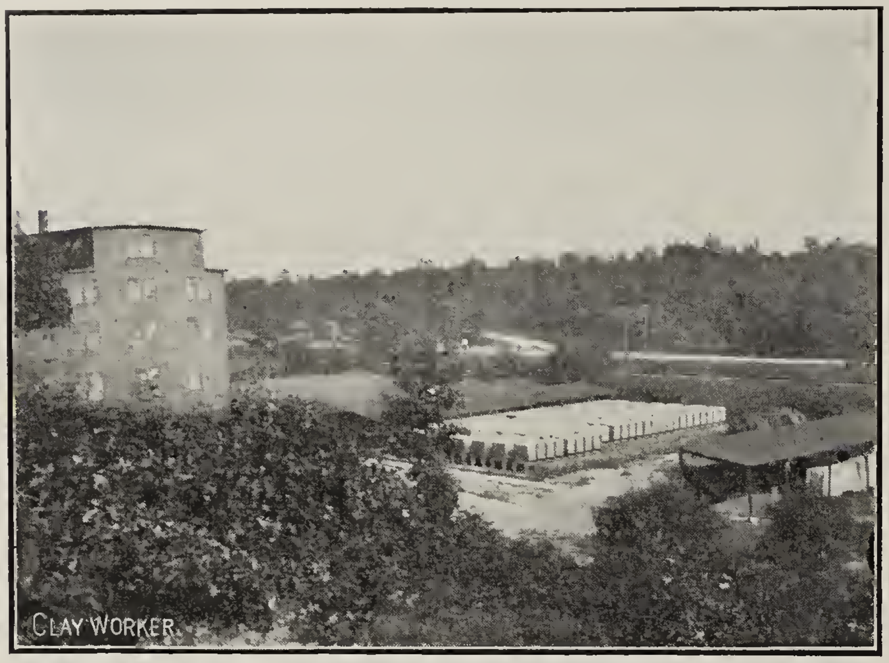
The brick are taken from the press by hand and stacked on cars in front of the press. They are handled with gloves or mits to avoid finger marks. The loaded cars go to the steam cylinder, in which they are hardened by being subjected to steam heat under 120 pounds pressure for about ten hours. The cylinder is sixty-six feet long and six feet in diameter, having a capacity of 20,000 brick. After the brick are hardened the cars are withdrawn from the cylinder and the brick run from the cars to the stock piles by means of a Matthews specific gravity carrier, which is seen in one of the accompanying illustrations.

Factory of the American Sand Cement Brick Company.

A notable feature of this plant is the utilization of machinery and mechanical means of handling the material at every stage possible, so as to minimize the hand labor required. Three men are employed on the sand pile, two on the cars, three at the presses, one at the wet mixer, one at the engine, and one "handy Andy," or general purpose man. The officers of the company are, C. W. Gibson, of Detroit, president; H. D. W. Gibson, secretary; G. W. Bostwick, vice-president and manager, and A. J. Lawrence, superintendent. The latter gentlemen are usually found at the plant and are exceptionally courteous. The management of the business is characterized by a broad gauged policy which deserves and will win an enviable measure of success.

A Sand Cement Brick Plant.

A couple of miles further east on the lake front is the plant of the American Brick Company, where a brick somewhat similar in appearance is made by a very different process. This company has the reputation of making one of the finest grades of cement brick now on the market. Geo. L. Smith, the secretary, treasurer and general manager of this firm, is a hail fellow well met and runs the business with an energy born of enthusiasm. Unfortunnately the plant was not in operation at the time of our visit, but we visited it anyway and enjoyed a two mile drive with Mr. Smith.



Weathering Sand Cement Brick.

Three Generations of Roeskes.

The main building of this plant is five stories high, built of frame and covering an area of several hundred square feet. One of the pictures illustrating this article was taken from a high sand hill to the left of the plant. The fourteen acres of sand the company owns here is of the same quality as found at the United States plant, the hills rising high above the plant in the background. The sand is conveyed to the third floor by means of a cup elevator and emptied on to screens taking the material down to the bin on the second floor. The sand is taken from the bin by means of a chute and mixed in a definite proportion with the cement and other materials in a measuring box. It is next conveyed to the fifth floor and sent down to the double pug mixer made by the American Clay Machinery Co., from which the material is dropped into the four-mold press made by the same firm.

The brick slide from the press on to wooden pallets and are placed upon a wooden frame set on cars. When full, these cars are shoved out on the tracks to the shed where the frame with its load of green brick is left and the car returned to the press. Thus the brick are not touched by hand until they are thoroughly cured, which requires about seven days. There is rack space sufficient for curing 400,000 brick. After they are cured, they are run into a hardening tank, where water is thrown on to them, they then are allowed to stand out in the open for some days.

The capacity of the plant is about 15,000 a day. When running the company employs about 24 men. On the second floor of the building the company has fitted up a machine shop, while a work shop has been erected to the right of the main building.

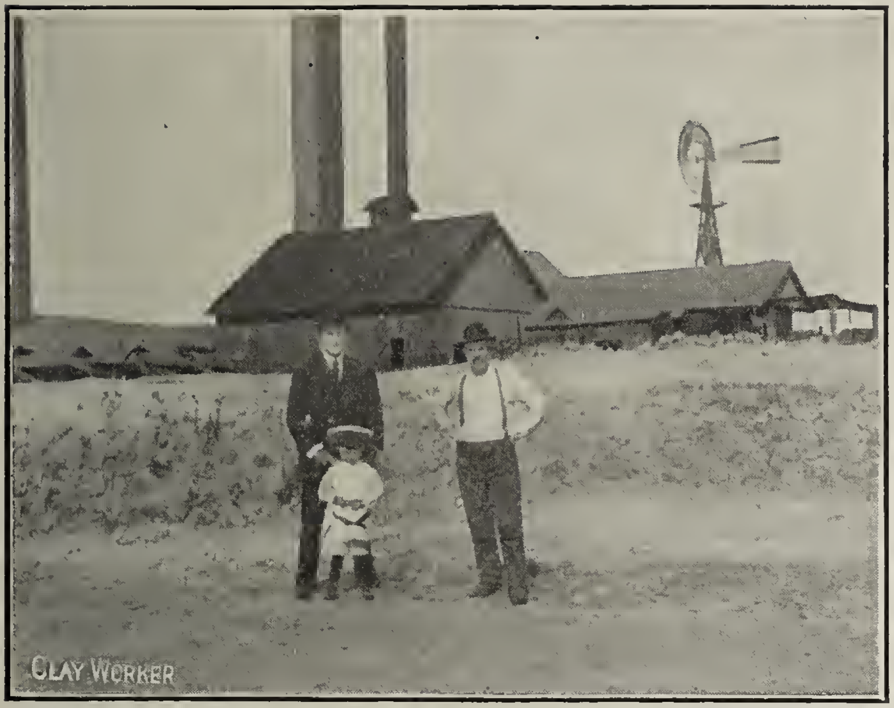
Sand Cement Brick, from Machine to Drying Racks.

The officers of the company are: Frank G. Smith, president; C. R. Collins, vice-president; Geo. L. Smith, secretary, treasurer and general manager, and Anthony Ritter, foreman. This plant has furnished brick for a number of buildings in Michigan City, the most notable being that of the St. Anthony Hospital, taking in the neighborhood of 200,000 brick. Their general run of brick is the steel grey, although they make some reds and buffs. This plant has been operating now for nearly four years.

Roeske Brothers' Clay Bank.

A Great Manufacturing Center.

Michigan City is an important manufacturing center and numbers among her leading industries several large establishments that give employment to thousands of workmen who turn out products annually valued at many millions. There is within the city limits a State institution which employs more than a thousand souls, most of them on long term contracts. These constitute a separate and distinct community and indulge a fancy for striped clothes and close cropped hair, shaved heads they are some times called. They live to themselves in a series of substantial brick structures built especially for them by the State within a brick-walled enclosure, which prevents the curious idler from without from meddling or interfering with the industrious workers within.



A Glimpse of Roeske Brothers' Brick Plant.

The Kiln Sheds at Roeske Brothers.

Another of the city's great manufacturing establishments is the car shops located a block or two from the U. S. B. Corporation, and so may be reached conveniently by visitors, who will find it a hive of industry and a growing one, too, which requires for its factory buildings several million building brick each year. These are supplied by the oldest brick plant in that section, that owned and operated by the Roeske Brothers.

One of Michigan City's Fine Brick Streets.

A Ten-Year-Old Pavement as Good as New.

A Successful Clay Building Brick Plant.

Through the kindness of Arthur Roeske, a junior member of the firm, the writer enjoyed a very pleasant two mile drive to their plant, where Christopher Roeske, the senior member of the firm, was found superintending the yard work, pushing it forward in order that two large shipments might be made promptly. Mr. Roeske is an old-time member of the N. B. M. A. and has been a successful brickmaker for over thirty-five years, by his industry contributing largely to the growth and prosperity of the community. He enjoys his work today as thoroughly as he did nearly two score years ago. "Our business was never better than it has been this year," he said.

The company moved to its present location fifteen years ago, after operating twenty years without the aid of railroad facilities. The first twenty years of Mr. Roeske's experience as a practical brickmaker, he molded brick by hand and burned them in clamp kilns. When they moved their plant they installed machinery throughout and are now turning out from 22,000 to 25,000 brick a day the year round. They use a sixteen chamber continuous kiln of 24,000 capacity and two clamp kilns of 200,000 capacity each. The company owns over 300 acres of clay land. The upper strata consists of from four to eight feet of sandy soil covering a vein of six feet of yellow clay. Below this yellow clay there is a bed of blue clay running down nearly 125 feet. The common red building brick is made from the yellow clay, while the blue clay mixed with the sand is used in making a buff brick. They can go down 101 feet in this clay deposit before they have to pump water, thus it can be seen that this plant can run for many generations to come before the raw material will be exhausted.

The clay and sand is taken from the field in two-wheeled carts and dumped into a disintegrator of the C. & A. Potts & Co. construction. From there it is taken through a Potts pug mill and carried by an old-fashioned chain elevator to a six-mold soft mud brick machine. A Potts sander and turntable are used. The pallets of brick are put on cars holding 432 brick and run into the dryer built by the National Dry Kiln Co., of Indianapolis, who also furnished the eighty-six cars used at this plant. This dry kiln has a capacity of nearly 40,000 brick. It takes 48 hours to dry the ware, eighteen thousand brick being taken out of the dryer daily. When the dry kiln is filled the pallets of brick are racked out under sheds and are allowed to dry in the open. There is rack room for over 200,000 green brick. A sixty horse power engine made by the Rumley Company, of Laporte, Ind., is employed, the water supply coming from a deep driven well. Over forty men are employed at this plant, some of them having been with the company for many years.

At the present time ten teams are kept busy hauling the brick, notwithstanding the fact that brick are shipped in cars on the L. E. & W. R. R. The Roeske Brothers are furnishing the brick for a large opera house which is being erected at Michigan City. This one order calls for a million brick. They also booked an order for four million for the Michigan Car Works. A one hundred and seventy-five foot smokestack is to be erected at the latter place, which alone will take 300,000 brick. This company has furnished all the brick for the many buildings at the car works, which consists of some thirty odd structures. In fact, the first order for brick taken by the Roeske Brothers was from the car company.

Splendid Brick Paved Streets.

One feature of the city's growth and improvement of which her taxpayers are deservedly proud is the excellent paved streets. There are twelve miles of brick pavements within the city all of which is in good condition, showing little or no wear, though the first stretch of brick pavement was put down nearly 15 years ago and has been subject to moderately heavy traffic. Owing to the sandy soil this first pavement was laid on a board foundation. The first cost was the only cost to the city, for there has been no need for repairs. For the last eight years concrete foundations have been used exclusively. Franklin, the principal street in Michigan City, is a magnificent two and a half mile brick paved thoroughfare and receives the heaviest traffic of any street in the city. It was laid over twelve years ago and has withstood the ravages of time and traffic in a very satisfactory manner. The bricks being even and smooth, having worn but little, are easily kept clean, aiding materially the sanitary condition of the city. The brick streets are laid with a sand filler, Brazil, Poston and Metropolitan pavers being used. These streets have cost about $1.50 per square yard, the city experiencing little or no expense for repairs, and in this respect is in marked contrast with the asphalt streets of which the city has four miles—"just four miles too much," said one taxpayer, who has learned by experience that brick pavements are much more durable and less expensive.

J. E. R.

NEW OFFICES FOR THE J. D. FATE COMPANY.

H. H. Fate, president of the J. D. Fate Company, Plymouth, Ohio, says that their trade has been very good this year. In fact, there has been a decided increase over previous years, and they are compelled to build an addition to their factory to enable them to take care of the business. This addition will be 50x100 feet, two stories high. A part of it will be used as offices, which Mr. Fate says they will fit up equal to the office of any clay machinery company in the country. They have recently received orders for a complete equipment with side-cut automatic table for Germany, and also an outfit for Strathcona, Alta., Canada.

Written for The Clay-Worker.

NEW YORK AND THE EAST.

SEPTEMBER WAS A good month and October opened warm and pleasant as summer, indicating that the business could progress finely, provided the rains did not come and frosts did not occur to cause difficulty. All through the eastern portion of the country building operations have continued exceptionally active up to the close of summer. Labor troubles have been at a minimum and other deterrent influences have ceased to operate as seriously as they have in years past. The effect has been to keep all interests employed and the consumption of brick has increased proportionately. There has not been a moment's time during the season thus far when the market has not been active and when every brick offered has not been taken at good prices. This happy condition has been very satisfactory to manufacturing interests and the sale has been heavy in all departments and for all grades. As manufacturers stand now, near the close of the season of 1906, they can look back on a season as profitable as the two which went before and can reasonably look forward to a season as profitable as the one just passed. The outlook was never better. The building projects now being planned are quite as extensive and the semi-public works to be constructed next season are quite as large as those which have been put up this season. Therefore, the probability that the sale of brick will be quite as large as it has been for the past two years is not unreasonable. In fact, most well informed persons consider that this is practically assured.

The Hudson river yards are beginning to get ready to close for the year after a very successful season. Never has there been a time when they have done better. They have had a continuous market for their product at profitable prices and buyers have frequntly been insistent upon immediate deliveries when brick were comparatively scarce. This desirable state of affairs has naturally led to favorable prices and the business has been conducted upon a better basis than ever before. The quantity made has not yet been given cut, but according to all reports it was the largest ever sent out by those yards. Many of them introduced labor saving machinery in the spring to assist in creating a larger output and this has contributed to the present satisfactory conditions; but after all, the real reason for the success of the yards has been the continuous and unprecedented demand for brick, which has characterized the trade all through the season. It has been the best and most even ever known and makers have been able to gauge with accuracy about what the demand would be from week to week, allowing a little leeway for unexpected orders, which have been more or less plentiful during the season.

The New York market has continued active and prices have been firmly maintained at the range quoted last month. The so-called trust was smashed, said the sensational press, and the more conservative press declared that the cement business had killed the brick trade. But the brickmakers do not think so. Their orders indicate no impending dissolution and their requests for prices on product for future delivery promise no necessity for an early demise. The numerous schooners, canal boats, barges and trains coming into New York loaded with brick offer no suggestion that the business is in a bad way. Quite the contrary is true, and despite all the forces which have been shouting aloud to each other respecting the reduction of the brick trade to a mere retail business in second-hand materials, business was never better. Their attacks have had absolutely no influence and there is not likely to be any more in the future than there has been in the past. The results have been better this year than ever before and the market has been more continuously active and profitable. Business has been done under more favorable conditions and the purchasing interests have been less exacting than they are sometimes. All these points are important as showing that the calamity shouting which has been in progress regarding the brick business amounts to nothing worse than the vaporings of those who have some proposition of their own to urge upon an unsuspecting public, in which the aforesaid public, unsuspecting or otherwise, will be cordially invited to walk up and invest its cash. Prices in the New York market range about as follows: Front buffs No. 1, $32.00; grays, shaded and specked, $32.00; white No. 1, $32.00; Hudson river common, $6.00 to $6.50; light, hard, $5.00 to $5.50; pale, $4.00 to $4.50; No. 1 fire, American, $25.00; No. 2 fire, American, $20.00; Scotch, $35.00.

Bright Prospects for 1907.

Building operations about New York which have been projected for next year surpass anything hitherto known in the history of the development of the city and its suburbs. The immense buildings planned are likely to require more building material than the structures which have been erected in any single previous year. They include not alone business blocks, but numerous large structures of a semi-public character, some of which will be elaborately and extensively ornamented. The requirements of building material for this construction work will be much larger than the quantity required during the past year. Moreover, there has been more than the usual number of dwellings projected. In only one section of the city have building projects declined. The Harlem and Bronx section has been overbuilt, particularly in flat houses, and those operations have ceased temporarily. The number of single dwellings is quite as large, but several family structures are not wanted and builders and investors are keeping out of them. Several elements entered into the reduction in demand for such structures. A number of buildings collapsed during the summer when work was in progress upon them. Two collapsed after they were finished and occupied. This had some influence. The subway, which was expected to solve satisfactorily all transportation problems and land the dweller in Bronx or in Harlem at his home in about twenty minutes from the city hall, failed to meet the requirements. It was found that the same conditions prevailed as before. Moreover, the delays in the subway have been worse than on the elevated road. It was soon found that dwellers there had no better transportation accommodations than before, and the houses in which they lived developed all sorts of dangerous tendencies. The result was a desertion, which left some parts of these sections without tenants. Now they are building up adjacent parts of New Jersey and Long Island in response to a demand for homes for these people. It means a big boom in those localities and sales of real estate, with projects for building, are both numerous and large in both those sections.

On the Jersey Side of the River.

Along the Hackensack river brickmakers are getting ready to put their yards into winter quarters after the most successful season they have ever had. Brick has sold even faster than they could make it, and now as the season closes there are enough orders in hand to clean out the yards completely, so it will be difficult to supply the early spring demand. The output along the Hackensack will be many millions larger than usual this season. Formerly 15,000,000 was considered a good output for some of the establishments. This year they haven't stopped at that figure, but have gone on until it will aggregate considerably more. They are all enthusiastic regarding the future and expect to see business next year better than ever before. Prices have been quite satisfactory and the construction of several cement block plants has not interfered with the brick business to any appreciable extent. In fact, the use of cement in this vicinity has been limited to the construction of one paper mill. It is a huge building, but the use of cement there has not damaged the brick business as can be seen. And even this cement paper mill has consumed many thousand brick in different parts of the construction work.

The New England Situation.

From Boston come reports to the effect that the quantity of brick on hand is moderate at the close, and that the demand, even though the season is ending, is of fair proportions and promises to expand rather than decline. The market has grown stronger during the month and there are indications of a raise in price, although as yet there is no quotable change. Common brick delivered on the job within the city limits command $9.50. For light hard, the quotation is $8.50. For New Hampshire culled W. S. brick on cars, f. o. b. Boston, $14.50 to $15.00 is asked. The advance which is promised by the conditions will carry all these to at least another dollar, and possibly more on som evarieties.

The building operations projected about Boston for next year's developments indicate another active year for Massachusetts brickmakers. Little accurate information is obtainable, but it is understood in a general way that the building projects will require even more material than those which have been completed this year. Brickmakers are jubilant regarding the outlook and are confident that they will do better the coming year than they have during the season now closing. Profits have been sufficient this year to make a vast difference with some who have had a serious time during years past. Both building construction, semi-public and public works will be prominently developed next season, requiring immense quantities of brick of all grades. With the yards practically clear of stock, the opening next spring can be looked upon as promising. The first sales will be at high range of values and large profits will result.

The New Durham Brick Company is constructing a plant at New Durham, N. J. The plant is located near the New York, Susquehanna & Western and the West Shore railroads, and has a side track running into the sheds. The clay is obtained from the Hackensack meadows by means of digging and dredging. The clay at that particular point is probably one hundred feet or more deep and the many thousand acres of meadows in that vicinity are underlaid with it. The company will be ready for operation in the spring in time to take advantage of the early spring demand in and about New York.

The Monument Pottery Company of Trenton, N. J., is about to construct a new pottery to cost $150,000. W. W. Slack, of Trenton, was the architect. The building will give much needed increase in facilities for the use of the growing business of the concern.

The Seaboard Brick Company, of New York, has increased its capital stock from $50,000 to $7,500,000, and has divided its stock into $2,500,000 preferred, to bear 6 per cent. cumulative dividends and $5,000,000 common.

Why the Sun Advocates Cement.

It will be remembered that last month the New York Sun attacked the brick business in various ways, pointing out that the brick market was doomed to disaster, owing to the fact that the reinforced cement business and cement block construction would speedily drive brickmakers out of business. It was difficult at that time to understand the Sun's motive. Ordinarily it doesn't devote much attention to such matters. It is content to let plain business go to other papers, while it handles the news in its own individual way. Those who are interested in such matters could not understand what was behind the matter and many speculations were made to discover, if possible, some basis for the attack. Had it been any other New York paper little attention would have been given to it. But the Sun is generally accurate on such subjects, consequently the attack attracted unusual attention.

But the secret is out. The United States Steel Corporation is going into the manufacture of cement and cement blocks upon a large scale. J. Pierpont Morgan owns a controlling interest in the Sun. The rest need not be explained. It is probably true that the attack on brick was inspired to create the impression that the brick business is doomed, so that purchasers of the new stock would feel as though they were obtaining something profitable and would buy more freely. This is a feasible explanation and represents the way the Wall street and high financial interests play the game all the time. They never hesitate to attack an interest in this way that apparently stands in their way. They never hesitate to give out false information regarding an industry if thereby some of their stock jobbing schemes can be made more profitable or the false information will attract more people to buy stock of more or less dubious possibility in profits.

It can be stated without fear of successful contradiction that the brick business was never more prosperous than it is today, and that the growth of the cement block and the reinforced cement business has not injured the brick trade in any way. It is absolutely certain that no matter how extensive may be the corporations which go into the cement business, the market for brick will be quite as active and there will be quite as liberal a sale for them as there ever has been. The cement block industry will rather help brick than injure it.

BURTON.

LAND DRAINAGE

BY J. J. W. BILLINGSLEY

SIXTY MILLION ACRES.

IT IS ESTIMATED that there are more than sixty million acres of swamp lands in the United States. It is also a notable fact that agricultural lands that are easily brought into cultivation are becoming scarce and the government has demonstrated what can be done to bring the desert or barren lands into profitable cultivation—expending millions of money in supplying water to make these waste-lands respond to the husbandman's touch. If the government is justified in expending money so lavishly to supply water to lands needing it, why not expend money to remove the superabundance of water and thus reclaim this vast area of swamp lands. The fact has been clearly established by individual enterprise that by drainage these waste swamp lands may be reclaimed and rendered not only habitable, but the very best for agricultural uses.

Since the government has set aside such vast sums of money to reclaim the arid lands of the West by irrigation, why not expend like sums of money to reclaim by means of drainage, the vast swamps of the lower Mississippi Valley and Florida, of the Sacramento Valley of California, and of Northern Minnesota and the Southern Coastal plain? These are now the only great remaining sources of agricultural lands to be occupied by the millions of population yet to be.

In the past in the States of Ohio, Indiana, Illinois, Iowa, Wisconsin, Michigan and Minnesota, the drainage of swamp lands has been done by individuals and corporations. The work, however, is fast becoming the concern of the State. The swamp lands that have been reclaimed by drainage now grow the finest celery, onions, asparagus and generally the best cereal crops. This year it is estimated that some of the reclaimed swamp lands have yields of corn estimated as high as 125 bushels per acre. In California the State aided in draining the "Tule" lands, as the extremely fertile swamp lands of the lower Sacramento Valley are called. Here are grown maximum crops of asparagus, onions and other vegetables.

In Minnesota and North Dakota a State Drainage Commission has been organized and vast areas of swamp lands are being drained by the States.

All of the 60,000,000 acres of swamp lands in the country cannot be reclaimed by drainage. Unfortunately many years ago Congress donated these lands to the States, with the proviso that they were to be drained. Except in a few cases this has not been done. But it is possible that arrangements can be made with the States, as has been done in the matter of irrigation, for the carrying on the necessary drainage under Federal auspices. If not, why not?

THE DEMAND FOR DRAIN TILE.

The present season has been favorable to tile manufacturers, with only a few exceptional areas. The rainfall has been abundant—in some sections of the country it has been too wet. The demand for drain tile has been quite equal to the capacity of the drain tile plants. In some localities the demand for large tile has exceeded that for small tile—in other places the reverse has been true. The introduction of tile drainage in a locality where little if any has been done in the way of underdrainage, the demand for small tile will take the lead. Further on those using drain tile will see the need of larger tile to enlarge the work of underdrainage, another step in advance they see the need of putting open ditches under ground—hence further increase in the size of tile is demanded. After putting the open ditches into large tile and the submains have been laid to extend the work of underdrainage, the demand for small tile will be increased to complete the work. In some sections where much had been done three, four or five years ago in laying small tile, the demand for large tile could hardly be supplied for a time. Then the demand for small tile set in again and this season it has been pressing hard upon some tile manufacturers. The latter increase in the demand for small sized tile indicates a thoroughness in the work that is encouraging. Be it said, however, that the sizes of tile do not run so low as was common 25 years ago. Then 2 inch or 3 inch tile was in common use; now it is seldom that less than 4 inch is used and some tile manufacturers do not make three inch tile. "Waring" in his book entitled, "Drainage for Profit and Health," seemed to favor the use of a large proportion of small tile (2 and 3 inch tile.) Subsequent experience, however, led to the use of larger tile. Much more importance is now attached to the aeration of the soil and subsoil, and the larger sizes of tile are thought to add much to better soil conditions. In view of these facts, a demand for small tile (4 or 5 inch) may indicate a beginning of the work of drainage in one section of the country, and it may indicate an advanced state of the work in another section of the country.

A DRAINAGE OUTLOOK.

Established reliable business conditions are important in farming as in other vocations. The certainty of growing maximum crops every year makes it possible to plan for maximum returns. The average farmer cannot afford to occupy a farm for a summer residence and a bare living. Improved lands have advanced in value to such an extent that makes it a financial consideration to buy more land, to broaden farming operations. It will be much better for the mass of farmers to improve their present holdings to the extent of doubling their capacity by thoroughly underdraining them. The cost will be much less than to buy more land and continue without this important improvement of the soil conditions, besides in this way, the farming business will be so intensified as to lead to an intelligent uplift all along the line of its operations. Emerson has well said that "drain tile are so many political economists pointing to a better day,"—a day of fat things. The man who thoroughly tile drains his land and is thereby able to grow two bushels of grain where only one grew before is a great benefactor—many have surpassed this high degree of usefulness in the world's great work, by growing maximum crops on tile drained land where none grew before, and there are millions of acres of the best agricultural lands that need to be, and must be reclaimed by underdrainage. Along the Mississippi river and its tributaries are large areas of the best land for agricultural uses that is not available and will not be available until drained, and the time is near when the increase of population and the occupancy of all the Western lands that are desirable, will imperatively demand that these lands be reclaimed. Our friend Cowgill and those associated with him, seeing the coming demand for drain tile, has pushed off down into the State of Mississippi and have erected large tile works, thus blazing the way to the future demand for drain tile in this vast area, and they ought to realize their expectations. It is a truth that the tile drainage of much of the cultivated land in the corn belt is the base to build upon for the best soil improvement and the best crop production.

BURNING TILE.

In burning tile, do not be in a hurry to close the kiln; a few additional hours of careful firing may be the difference between good and inferior tile. See to it that the tile are well burned before closing up the kiln. After closing, give ample time for the heat to equalize and temper the tile before turning on the air draft. Tile from some clays are made better by closing the kiln tight and keeping it so for twenty-four hours or more after the last fires. Again we say, take time to secure the best results.

CORRESPOND-ENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

A Valuable Publication.

Editor THE CLAY-WORKER:

Enclosed find $2.00 for subscription to THE CLAY-WORKER for one year, beginning with the current issue. I am very much pleased with the sample copy you sent me and think it a valuable publication, particularly to a beginner in the clay industry.

H. C. BROWN,
President Brown Clay Works.

A Correction—The Boyd Press Giving Entire Satisfaction.

Editor THE CLAY-WORKER:

On page 282 of your September issue, there is what purports to be a letter from the McDonell Brick and Cement Company, of Jacksonville, in which there is reference to a neighboring plant, which evidently refers to ours, for we are the only ones in this vicinity using a Boyd Press for the manufacture of sand-lime brick. The statement in same to the effect that our brick are so soft that we could scarcely handle them, is untrue and inexcusable. On the contrary, our raw brick are firm and one can even stand on them without their breaking down. The Boyd Press is giving us entire satisfaction and we are producing first-class brick and have a ready sale for all of them as fast as we can turn them out.

As regards the statement about our inability to obtain sufficient pressure, this is incorrect. We do not need all the pressure this press affords. If we were to put in another press, we would buy another Boyd, for we are confident that it is the best sand-lime press on the market. Trusting that you will publish this, and so correct the false impression as to the character of the brick we are making, we are,

Yours very truly,
FLORIDA WHITE PRESSED BRICK CO.,
By George P. Docker, Manager.
Jacksonville, Fla., Oct. 15, 1906.

Entertaining and Instructive Reading.

Editor THE CLAY-WORKER:

I have read with intense interest the delightful contribution in the August and September CLAY-WORKER, entitled "In Perpetuum Hominum Memoriam." When I first glanced over the pages of this number of THE CLAY-WORKER and saw through the gathering shadows of early twilight, the words "In Perpetuum Hominum Memoriam," staring up at me in the boldest of pica type, I marvelled greatly that our cheerful editor had departed from the legitimate and had made room for matter which, to judge by the title, was so bizarre—so suggestive of dead and gone things; of oblivion; of the pyramids, the sphinx, the mummies and the buried civilizations of Babylon and Egypt; of the catacombs of ancient Rome; of the gravestones mouldering in the weed o'er grown cities of the dead in our own fair land; of the doom awaiting the human race, high and low alike; of the mutability stamped upon all earthly things.

Without waiting for a light I settled down in an easy chair in the gray twilight to read and find out what it all meant—this wandering away of our staid and scientific CLAY-WORKER into the bewildering thickets of fiction. Fiction? Mausoleum fiction? Shades of little Tim!

But as I read on, growing more and more interested, my astonishment at a supposed infraction of the ethics of technical journalism gave way for a lively satisfaction that our worthy editor had unearthed and made room for a story so unique and entertaining. I grew absorbed as the plot unfolded, forgot to switch on the light, and my wife coming into the room some time afterward discovered me trying to read in the gloom, and exclaimed petulantly, as she spitefully turned the electric switch, "Why didn't you light up? Haven't I warned you often enough that you would ruin your eyesight trying to read in the dark?"

"Well, my dear," quoth I, rising and making my way rather stiffly to the mantel piece, where reposed that soul-comforting combination—the briar-pipe and the tobacco jar—"I have finished now, but 'twas a superb story, cleverly conceived, excellently written, charming, and above all, thought-provoking. Would you read it?"

"No, thank you," she replied, "I must practice now," and with a whirl of her skirts, she seated herself at the piano, from which the liquid strains of that old favorite, Gottschalk's "Last Hope," were soon floating out on the evening air.

V. C. V.

Machinery Wanted for a New Brick Plant in Indian Territory.

Editor THE CLAY-WORKER:

Myself and associates own gas wells in the Indian Territory, and we are figuring on putting in a brick plant there. We will need one stiff mud machine for making paving brick, with represses, etc., also one for making common building brick, and will need one or two dry presses with the necessary dry pans, pug mills, etc., for preparing the clay for the different machines.

We will also need a Corliss engine and boiler large enough to operate the above machinery. It will take an engine between 300 and 400 horsepower. If we decide to put in this plant, we will be in the market for the above machinery, and such other machinery as it will take to equip a plant, including a steam shovel, dry house cars, pipe, belting, pulleys, shafting, etc.

If any of your advertisers desire to submit to us prices on their machinery, they can do so by addressing me at Little Rock, Ark., giving their best prices f. o. b. factory, together with weights, etc., so I can figure freights. Yours truly,

Little Rock, Ark. W. W. DICKINSON.

Are Local Combinations Mischievous Combinations?

Editor THE CLAY-WORKER:

I have read with much interest your editorial, "Making Copy Out of Brick Prices," and also the article, "Enduring Brick," by Mr. Gery. It certainly would make hard red brick turn pale to read such articles as were published in the New York Sun on this question. At the same time you must allow that even a newspaper man (?) does not know all there is to be known about the brick business. Even Mr. Gery misses the mark when he attributes the high prices that brick have brought in New York for the last six months to a "mischievous combination." To the writer this does not apply to the situation at all. If Mr. Gery is in any way posted, and he certainly ought to know something about it, he must know that in spite of any combination or anything else, that all the brickyards on both sides of the Hudson river and all other brickyards delivering brick into the New York market, located on any railroad which would give a freight rate sufficiently low to allow them to get in at all, and there are many, some of them located as far west as Syracuse, to say nothing of the yards in the States of Connecticut, Rhode Island, Massachusetts, all combined, could not supply the demand for brick in New York city the past season. I know for a fact that no "mischievous combination" could begin to fill the orders that were sent out from that city up to a certain time, even with all the cement building (?) which is claimed to have been done by the New York Sun and which must have been going on at that time.

It would seem to the writer that if this "mischievous combination" could have handled the situation as they were fully capable of doing, and if all the different "and many incompetent brickmakers," who are now owners of upwards of one hundred more machines than were in operation last year, had listened to some of the older brick manufacturers on this river, there would not have been the slump in prices referred to that there is, nor would there have been the yards for sale that we have now.

It is all very well to blame associations or combinations, but I fail to see any difference between large corporations, who in their minds and actions are desirous of being so large themselves, that they can control prices, and this "mischievous combination." Nay, I should say, give us the combination, mischievous or otherwise, before a single concern that is in competition with it. In other words, plain and simple, so it can live and by its living you may die. Rather I should say, "and with all the emphasis that I can bring to bear on it," get together boys, talk the matter over, both big and little. Where is there any reason, sense or anything else attached to a condition of making, say "three million brick for argument's sake," to supply a market which needs but one million. It simply means that the small manufacturer is probably stewing and fretting his flesh away, and worse still, perhaps, his money, too, trying to figure out a way that he can get even his own out of them, which is simply out of the question for him to do under the system that often prevails on the Hudson river among its brick manufacturers. Not only on the Hudson, but there are a number of other places too numerous to mention that are in the same category, and why? Yes, who will answer the question?

Many reasons can be advanced for this condition, lack of confidence in one another? No, I would not say that altogether, but more a lack of meeting one another oftener in an association, and getting to understand the actual condition. In other words, meet together, get together and talk the situation over in a friendly way. Don't leave the meeting when but half over, because it has not yet got to the point where it will please you best. Stay a little longer, because it is bound to come your way in the end, and it will be far better for you to make one million brick at a small profit than to make three million at a loss. In the latter there is absolutely no pleasure at all to the honest man who wants to pay 100 cents on the dollar. Whereas, when made at a profit, there is a satisfaction which no words in our language can describe, and in my opinion it might just as well prevail among all right-minded men, of which we claim to belong.

The argument that prices will go up to a point which will stop building, etc., is another remark enough to make a brick talk. Prices want to be at a point where there is a profit to the manufacturer, when same is paying good wages, and then be held there. It is by getting together and talking over the situation in a friendly way, which brings about the condition under which we all, as individuals, desire to live in. To one who has worked both in and outside of organizations which I refer to, worked impartially, I have nothing but words of praise. It is impossible for any one to estimate the benefits that are being derived from the National Paving Brick Manufacturers' Association, which is doing a work that could not be done by any single corporation, no matter what their capital might be. It not only benefits the manufacturer of paving brick, but every man, woman and child that is living, or will live on a street paved with brick, or one that is contemplated to pave with this material. The same can be said of the National Brick Manufacturers' Association, which is in another line, the American Ceramic Society also; they are similar in organization to what I refer. They bring the members together to discuss a situation that in one way or the other affects every one of them, which is the same, or should be with all the brick manufacturers who supply brick to the city of New York. With this working as it should, there would be no such articles as appeared in the New York Sun and the brick manufacturers on the Hudson would be enjoying a peace of mind, which at the present time seems foreign to them.

This seems a long letter, but I trust you can find space for it in your valuable journal. I believe in organization and know that not only will the brickmakers profit by it, but that the builders themselves will, in the long run, be the gainers, for an association that will insure a stable market. Let us get together and stay together for the good of all.

A LITTLE HUDSON RIVER BRICKMAKER.

Written for THE CLAY-WORKER.

CLEVELAND BRICK NEWS.

DESPITE the advancing season this city approaches another winter of active operations in the building line. Last winter was an exceptional one in that regard, as only two weeks was lost from bad weather. From the buildings already either planned or started, and most of them brick structures, there seems to be a prospect that there will be the same activity during the next six months as has characterized the summer season.

Brick men here are jubilant over this condition and are preparing to keep their plants running full blast throughout the season. What improvements and additions have been planned will be executed while things are running and plants will not be closed down to facilitate matters. The best prices in years in all lines are prevailing and the makers are not slow to take advantage of the boom which is on.

For the first eight months of the present year the record of the whole year of 1905 for building permits was smashed. In 1905 there were issued 4,976 permits for buildings, at a cost of $9,777,145. To September 1 of the present year there were issued 5,036. It is expected that the total cost of this year's buildings in Cleveland will exceed $14,000,000. This does not represent a boom in any particular month, but a steady increase, as the following totals for the months will show: January, 360, $1,517,934; February, 306, $429,905; March, 562, $1,254,520; April, 884; $1,323,786; May, 800, $1,372,129; June, 765, $1,476,703; July, 643, $1,120,338; August, 716, $1,120,355.

The claim so frequently made that cement is the only material from which an entirely fireproof building can be made, is shattered when a new building being erected in Cleveland is closely inspected. A few months ago the big factory of the Glidden Varnish Company, in this city, was destroyed by fire and it was necessary to build a new plant. A factory, said to be the largest in the world devoted to the making of varnish, is being built here and there is not a stick of wood in the whole structure. What is of more importance, it is being constructed entirely of brick and steel. Steel is even used for the window glass frames. The walls are of faced and pressed brick and the floors of fire brick and cement. The roof is of tile, slate and iron. There will be no more big fires at the Glidden plant when it starts again. The glass in the windows is wire glass and every precaution has been taken to make the buildings fireproof. They will be low and will cover twelve acres. A plant built much after the same idea is being put up here for the White Sewing Machine Company. Many local brickyards have been busy this summer supplying material for such structures.

The paving brick situation in this part of Ohio continues good, and fancy prices are still being received, with a prospect of them continuing. The demand is greater than the supply, despite the fact that the paving season is approaching a close. As nearly 200 Cleveland streets are being advertised for next year, there is little probability of there being any slump next season.

The plant of the Gwynn Brick Company, which was destroyed by fire a few weeks ago, is being rapidly rebuilt and will be in operation again in a short time. The plant of the Brookside Brick Company, which met a similar fate, will also be rebuilt.

The training school operated under the auspices of the Building Contractors' Association, in which young men are taught the mysteries of bricklaying, is meeting with unusual success. It has been found that bright students can finish the course and be put to work in three months, though the course was intended to be longer. The school is solving a problem which has long confronted Cleveland builders. A large quantity of "new blood" has been infused into the local field and the threatened shortage of bricklayers has been averted. Contrary to expectations the labor unions have not complicated matters by refusing to work with men trained in this novel school. Nearly two hundred young men have "graduated" since the school started, eight months ago.

BUCKEYE.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

THE FUTURE of the building situation here undoubtedly looks good from the brick man's standpoint. The permits for brick buildings issued during September aggregated in value $2,630,000 for 100 buildings, while the permits for brick buildings for the month preceding aggregated in value $1,658,000 for ninety buildings. The general idea of both owners and builders is that there will be no dropping off of work on account of the approach of winter. The clearing up of debris is proceeding at a constantly increasing rate, as the high wages offered are bringing in more men, and the prospect is for a great influx of both men and teams, now that the harvest season is ending in the country. The building of wooden structures has ceased, to a large extent, and more permanent work is occupying the attention of builders. As a result, the letting of large contracts has become a striking feature. The labor strikes in the brickyards are about all settled and while help is scarce work is proceeding at the various plants in a fairly satisfactory way.

The actual present demand for "spot" soft or stiff mud brick is not extraordinary. Most of the big brick manufacturers have one or two of their kilns shut down. So far, very few new soft mud bricks have been used in the rebuilding of the city. There are millions of old brick which are being cleaned and used in the construction of one, two and three-story buildings, and until the supply of these begins to run short the makers of brick can hardly expect the best of sales. The Patent Brick Company, 331 Berry street, is not selling as many of its mud brick as before the fire. The monthly sales are now but little above 500,000, as against 1,000,000 before the fire. The Sacramento Brick Company and the other large makers report about the same state of affairs. Mr. Lipp, president of the San Francisco Brick Association, says that the business of the mud brick makers is generally slack and he does not expect the demand to reach the predictions of a few months ago for some time.

Other lines of clay products are, however, rushing. Terra cotta sewer pipe, electrical conduits, facing brick and other lines are in great demand for immediate use.

The Carnegie Brick and Pottery Company, manufacturers of high grade facing brick, fireproof brick and pottery, are running at full capacity and are hardly able to fill orders. The management is greatly enlarging both the pottery and brick plants. The San Jose Brick Company, while still without a permanent office in San Francisco, is nevertheless doing its old business. The contract for the Southern Pacific tunnels, which will require 5,000,000 brick, is still occupying the attention of this company.

The Sacramento Brick Company has the contract for furnishing the brick for the fine fireproof building now being put up by A. Schilling & Co., tea merchants.

Byrne Bros. and Michael J. Byrne, surviving member of the firm, have filed with Richard Belcher, referee in bankruptcy, a petition in insolvency. The firm conducts a granite quarry at Lincoln, Cal. The liabilities are stated to be $3,379.37 and the assets at $2,720, part of which are claimed to be exempt from execution.

George M. Swartwood, secretary and manager of the Palouse Pottery Manufacturing Company, has moved to Spokane, Wash., and will have charge of the main office of the Northwestern Stoneware Company in that city, which is a combination of the various pottery concerns in the Inland Empire. A. J. King, president of the Palouse Pottery Manufacturing Company, will have charge of the business at North Yakima, Wash.

The Burrill Constructing Company of San Francisco has been awarded a contract for resewering Market street, from Second to East street, on its bid of $90,529. By the terms of the contract, the company is to use three shifts of men, working day and night, and is to have the job completed before January 1, 1907.

In order to pay for the installation of more machinery, the Mixcoac Brick Company of the City of Mexico, Mexico, has increased the capital stock of the company from $250,000 to $450,000. The actual daily output is now a little less than 50,000 brick, but machinery is being installed that will enable the manufacture daily of 650,000 brick. The intention of the company is to gradually increase the capacity of the plant to 1,000,000. Sunset.

San Francisco, Cal., October 5, 1906.

Written for The Clay-Worker.

POTTERY NEWS.

THE VARIOUS PLANTS in the vicinity of this city all report a good fall trade, but conditions in the productive line have been bad, on account of the extreme shortage of gas. In fact, this has held so many plants up that they have thrown it out entirely and will use coal exclusively. All of the plants are building coal bins and getting ready to fire all their kilns with coal should it become necessary. Some of the potteries here are contemplating improvements, while others are making them now.

Mr. W. M. Grocott is erecting a small pottery here for the manufacture of art ware and specialties. The plant will have one kiln only and one decorating kiln.

The Potters Mining and Milling Company of this city, grinders of potters' flint and spar, are putting into use a new electric lighting plant at their flint mill here. The outfit is a large one.

The bursting of a boiler at the new pottery plant of the North American Manufacturing Company, at Newell, W. Va., has held matters up there considerably. The damage will be repaired at once so that the manufacture of saggers can go on in order to have a sufficient supply when the plant is ready to start the first of the year.

The Kenilworth Tile Works at Newell, W. Va., started up last week and is now running in full up to the biscuit kilns. They expect to fire their first kiln next week.

The Barberton Pottery, at Barberton, Ohio, which was put in the hands of a receiver, has been purchased by the Akron High Potential Porcelain Company, who will operate the same on high potential and common insulators. Mr. A. L. Dyke, formerly of New Cumberland, W. Va., is the general manager of the new concern.

The Mosiac Tile Company of Zanesville, Ohio, is putting in another clay-washing plant, in an effort to keep up with their constantly increasing business.

It is reported that the pottery plant located at Letonia, Ohio, which has remained idle for about ten years, is to be started up. The plant has three kilns. The citizens of Letonia would be glad to have the plant resume operations.

The Wirt Manufacturing Company of North Hanson, Mass., has its new porcelain plant there about completed. Three kilns are being erected.

The Bell Pottery Company at Columbus, Ohio, has been placed in the hands of a receiver. The plant has only been running half time for some little time past.

The Nernst Lamp Company of Pittsburg, Pa., a Westinghouse interest, is installing a pottery outfit on the fourth floor of the old Westinghouse building, where they have a kiln and, in fact, a complete pottery, where all the porcelain used in the manufacture of the famous Nernst lamp will be made. Some of this ware is composed of tubes having a wall 1-100 of an inch in thickness, and which is fired at cone 16.

The Ford China Company of Ford City, Pa., which has been operated by the Colonial Trust Company of Pittsburg, Pa., has been shut down and placed in the hands of a receiver. The trust company will pay all claims against it, but the plant will not resume operations until its many law suits are settled, at which time the Colonial Trust Company will likely lend the assistance to start the plant and to operate the same.

Tom Potter.

Written for The Clay-Worker.

PITTSBURG AND WESTERN PENNSYLVANIA NOTES.

THE COMING of fall finds the brick and clay-working industries in the Pittsburg district in the best of condition, and considerably in advance of the condition of the same time last year. Nearly every one of the brick manufacturing plants is running to the full capacity, and the reports received from the fire-proofing, conduit and tile makers indicate that they are anticipating one of the busiest seasons that they have had for years. With these latter concerns, this condition is probably brought about by the fact that the demand is so urgent for the many large office, mercantile and warehouse buildings that are now in course of construction, and under contract to be finished by early spring, that these materials will have to be furnished all during the winter, as by that time the structures will be in such an advanced state that work can be carried on all winter, regardless of the cold.

Manufacturers of fire brick, blast furnace blocks, glass house materials, etc., report an unusually good outlook, and the welcome announcement made by the United States Steel Corporation that several new blast furnace plants would be built at once, means that several immense orders for blast furnace brick and hot blast stove linings will be placed with local manufacturers within a short time.

The demand for paving brick has commenced to fall off considerably, but this is, of course, expected with the change of seasons. The majority of these manufacturers will now turn their attention to the making and burning of building brick, for which there is good demand all winter, and will incidentally lay in stocks for the coming year when, from the local indications, an immense amount of street paving will be done in this vicinity.

Terra cotta conditions remain unchanged, with good demand at present, and no dropping off expected for some months to come. It is being extensively used in the city for the decorative fronts of many large buildings, and quite a demand has been created for it.

The report of Building Inspector S. A. Dies for the month of September shows that during the month permits for the erection of 215 new buildings, to cost $1,126,390, were issued; 58 permits for additions, to cost $55,734; permits for alterations and repairs, to cost $56,226, making a total for the month of $1,238,550. This is a decrease of seven per cent., as compared with the figures for September, 1905. For the entire year, however, the report of the Pittsburg Bureau of Building Inspection shows a large increase over the figures of last year. The figures for this year have reached almost $14,000,000..

The big plant of the New Castle potteries, which has been idle for many months, is the basis of negotiations, whereby a party of East Liverpool (Ohio) capitalists will purchase it, and again place it in operation. The present owners are all New Castle men, and the pottery is one of the best equipped in Western Pennsylvania. If the deal is made, the new owners intend making some improvements, and will run the plant to its full capacity, filling orders that they are unable to properly handle at the plants at East Liverpool.

The borough officials of Somerset, Pa., have awarded the contract for the paving brick that will be used by that municipality this fall in the paving of several of the streets to the Fairmont Brick Company, of Fairmont, W. Va. Eight manufacturers placed bids on the contract, which will amount to several hundred thousand brick.

The Snyder Brick and Coal Company, of Rockwood, Somerset county, Pennsylvania, has been incorporated with a capital stock of $30,000. The incorporators of the company are Peter Snyder, of Rockwood; Harrison Snyder and George H. Moon, also of Rockwood; Thomas Miller and George W. McCarthy, of Connellsville, and George Martin, of Johnstown, Pa.

The Petersburg Fire Brick and Tile Company, Coal Grove, Ohio, reports having a heavy sale of cupola "Daubing" or "Fix." This is a material made of ganister and fire clay, and is mixed by the foundries into a stiff mud and plastered over the iron beds of the tuyeres and over the bottom of the cupola, thus preserving the cupola lining for a longer time than has the average life in the past.

The Layton Fire Brick Company, Layton, Pa., has been awarded the contract for furnishing 825,000 fire brick for paving and 125,000 Hillside block for the same purpose for the city of Uniontown, Pa. The contract price for the fire brick was $10.85 per thousand, and for the Hillside block was $16.50 per thousand.

At the annual meeting of the Savage Mountain Fire Brick Company, of Frostburg, Md., the various officials reported a very prosperous year to the stockholders, the statement submitted showing that it has been the most prosperous in the history of the company. All of the old officers were re-elected. The officers are Charles Gorsuch, president; H. C. Gorsuch, vice-president, and John A. Caldwell, treasurer and manager.

The Pennsylvania Silica Brick and Manufacturing Company is again in trouble, and the plant has been taken charge of by United States Marshal Stephen P. Stone, of Pittsburg, who will offer it for sale to the highest bidder this month.

A charter will be asked for this month for the Derry Glass Sand Company, which concern has extensive clay beds in the vicinity of Derry, Pa., and engage extensively in the manufacture of fire brick, paying especial attention to the manufacture of brick and blocks for use in glass factories. J. B. Huff, M. W. Saxman and H. C. Butterbaugh are at the head of the company.

The brick plant of the Croton Limestone and Brick Company, in Hickory township, near New Castle, Pa., was visited by a fire that almost completely destroyed the plant, and caused a loss of about $25,000, on which there was no insurance. The plant gave employment to about 100 men, who will be temporarily thrown out of employment until the work of rebuilding the plant, which will be started at once, is completed.

The report is current at Johnstown, Pa., that the basic brick plant of that city, and owned by the Harbison-Walker Refractories Company, may be removed from that city to Joliet, Ill. This could not be confirmed at the offices of the company in Pittsburg, the officials there refusing to discuss the matter. The plant closed down in almost all departments the latter part of last month, and it is not thought that it will be started again on account of the decision of the supreme court, that the city should open a street that will run through the present site of the plant. George W. Griffiths is the manager of the plant, and in the event of the company dismantling the plant and moving it to Joliet, will have charge of the new plant also.

G. D. S.

THE NEW YORK SCHOOL FOR CLAYWORKERS FLOURISHING.

The State School of Ceramics at Alfred, N. Y., has opened with an increase of 40 per cent. in the registration of students. The young people of New York are awakening to the opportunities set before them in the school. Many of the students secured vacation jobs in factories and have returned with new problems to solve.

CUBA'S ADVANTAGE IN COMMERCE.

Cuba, the country we had a scrap over and are now playing step-father to, has quite a lot of business transactions with this country, and gets more than she gives. According to the latest report from the Department of Commerce, we take 86 per cent. of Cuba's exports of nearly $85,000,000 a year, but in return she only buys 45 per cent. of her imports from us, and her imports are only a little more than half of her exports. In other words, if Cuba bought all her imports from us, and we took all her exports, we would then be giving her about twice in money what she spends with us, while, as it is, the amount is cut to less than half of that. After they get through with settling that little revolution down there, we hope they will find this matter worth looking into.

OFFICIAL ANNOUNCEMENT.

THE TWENTY-FIRST NATIONAL CONVENTION TO BE HELD AT ST. LOUIS, MO., FEB. 4 TO 16, 1907.

American Ceramic Society and National Paving Brick Manufacturers' Association Hold Separate Sessions February 4 and 5.

The Sessions of the N. B. M. A. Will Begin Wednesday Afternoon, February 6, and Continue Thursday and Friday, After Which the Time of Delegates Will be Devoted to Visiting Clay Plants, Etc.

AT OUR LAST convention, we received a most cordial invitation to meet next year at St. Louis. The call came from the united clayworkers of that great clay center, and was so earnest, nay urgent, as to be well-nigh irresistible, and we now have pleasure in announcing that arrangements have been made for a meeting to be held there February 4 to 9, inclusive. As in former years, there will be a series of joint conventions. The American Ceramic Society will begin the week, with sessions Monday and Tuesday, and closing Wednesday forenoon. The National Paving Brick Manufacturers' Association will hold its sessions during the same days. The N. B. M. A. will hold its first session Wednesday afternoon and follow with one session each on Thursday and Friday forenoon, leaving the afternoons of those days for the inspection of clay plants and such other sightseeing as visitors may care to indulge in.

In determining to meet in St. Louis, we are influenced in a large measure by the fact that we have never before met in convention west of the Mississippi river, and also by the accessibility of that city from all quarters of the country. The late World's Fair proved conclusively that it is one of the most get-at-able cities on the continent, and we feel assured that this fact and the knowledge that the doors of every one of the great clay manufactories of St. Louis and vicinity will swing open to those who attend, will result in the largest convention in the history of the Association. In every way St. Louis is prepared to entertain and instruct visiting clayworkers who will find in the extensive clay plants, located in and about the city, a means of comparison in modern methods of manufacture that will prove of inestimable value. No city offers for the inspection and edification of our members a larger variety of clayworking industries. Her building brick, paving brick, fire brick, sewer pipe, terra cotta and other ceramic establishments are both extensive and modern in equipment and afford object lessons of importance in almost every branch of clay work. It is needless to say that our members, and those who accompany them, will be received and welcomed with open-handed cordiality, and that no effort will be spared to make the St. Louis convention a memorable event to every participant.

Further announcement as to hotel headquarters, railroad rates, etc., etc., will be made subsequently. Those desiring information as to the requisites of membership, plans for the exhibition of clay products, etc., are requested to communicate with the Secretary, at Indianapolis, Ind.

THE EXECUTIVE COMMITTEE,
JOHN R. COPELAND, President.
THEO. A. RANDALL, Secretary.

OBITUARY.

WILLIAM W. REEHL, BUCYRUS, OHIO.

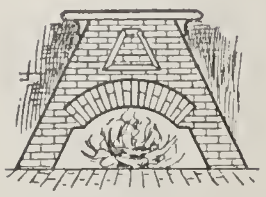
AFTER a brief illness, Wm. W. Reehl died at his home at Bucyrus, Ohio, Friday, October 5, of typhoid fever. Mr. Reehl was in his thirty-ninth year, having been born at Bucyrus, February 22, 1868. His whole business life has been given to the American Clay Machinery Company and its predecessors. The success of that great enterprise is due in a large measure to his earnest and persevering labors. He was modest and unassuming but possessed a great reserve force, and it seems inscrutable that one of such sterling qualities should be cut down in the very prime of life. He was a member of the National Brick Manufacturers' Association, and has attended nearly all of the conventions. His death will be felt as a personal loss by thousands of clayworkers throughout the land with whom he had had business dealings as secretary and general manager of the American Clay Machinery Company, which position he had held since the reorganization of the company, some years since.

The Late W. W. Reehl.

The funeral occurred Sunday, the 7th inst. The following served as acting and honorary pallbearers: R. C. Penfield, of New York; L. W. Penfield, of Willoughby; W. C. McCullough, C. R. Rowe, E. G. Reid and F. L. Hopley, of Bucyrus; J. B. Gormly, W. S. Nichols, John Farquhar, C. B. Sharer, W. A. Blicke, Samuel Auck, W. S. Hight, R. O. Perrott, J. S. DeLashmutt and W. R. Cunningham, of Bucyrus; W. E. Hayfield, of Columbus; G. C. Stoll, of Chicago, and W. B. Yost, of Cleveland. Mr. Reehl leaves a widow and two children, a daughter of twelve years and a son of six.

Written for The Clay-Worker.

ST. LOUIS BRICK AND BUILDING NEWS.



ALTHOUGH much activity in building is being shown in the downtown districts, there has also been a great deal going on in the outlying and residence sections of the city, such as many handsome apartments, flats and dwellings, during the past nine months. While the aggregate volume of money represented in the cost of buildings is shown, the activity of the building movement is really indicated in the increase of the building permits taken out. Each permit represents an individual enterprise and shows that the activity is general and well distributed. This indicates the stability of the building movement.

From all indications, 1906 will be a record breaking year in the way of new building construction, as it already shows a gain over 1905 of 658 in number, or about 12 per cent., and an increase in the aggregate amount of $4,970,624, or about 32 per cent. The greater part of the building movement had its greatest activity in the downtown section, as many permits have been taken out for office buildings, stores and for the remodeling of old structures, and as the erections downtown are of a costly sort, one can readily see why the aggregate amount has swelled to such a great extent.

The year 1905 was a record breaker, as it had recorded to its credit the highest number of permits and the greatest aggregate value for many years past, but this was thought to be a boom, as the result of the closing period of the World's Fair, for as every one knows, the World's Fair prices retarded the movement because of expensive material and labor. The year 1906 in building and all other phases of the real estate business has so far shown wonderful degrees of activity and advancement and the outlook for the future of the city is undoubtedly most favorable.

The following is the record for the first nine months in this year, as compared with the same period in 1905:

	Building permits for 1905.		Building permits for 1906.	
	Number.	Amount.	Number.	Amount.
January	275	$990,884	575	$1,743,553
February	353	1,275,122	535	1,636,263
March	1019	3,012,416	669	1,933,339
April	834	2,983,008	829	4,459,715
May	758	1,886,447	904	2,163,255
June	678	2,163,149	830	3,010,668
July	755	2,374,395	876	3,358,779
August	827	1,856,430	948	2,233,900
September	826	1,689,765	912	2,031,069
Total	6325	$18,231,616	7077	$22,570,541

The building movement for the last five years repeats the story of unprecedented progress and activity with the one exception of 1904, the World's Fair year. This was because the citizens proposed to entertain her guests, rather than labor, and then, too, labor and material were exceedingly high, as World's Fair prices prevailed, and an abundance of work afforded to every class and trade by the fair.

The total number and volume of building permits issued for the last five years were:

	Number.	Amount.
1902	3017	$12,856,035
1903	3035	14,544,430
1904	4066	14,075,794
1905	8265	23,434,564
1906 (estimated)	9240	30,750,000

The building movement for 1905, the year after the fair, showed an enormous gain of record breaking proportions. The gain for the year over the previous year was 65 per cent., ranking first in the percentage of gains as compared with the other large cities of the country. From 1903 the percentage of gain for each year over each preceding year was as follows: 193 over 1902, 13 per cent.; 1904 over 1903, a loss of 3 per cent.; 1905 over 1904, a gain of 65 per cent. Taking the first eight months of 1906 as a criterion for the estimated volume of building for the year 1906, will show a gain over 1905 of 31 per cent., which will also make 1906 a high record for building in the history of the city.

Permits for the erection of buildings to cost $2,031,069 were issued during the month of September by the Building Commissioner. This is a gain of $341,304 over the corresponding month of 1905. The gain is substantial new brick buildings. For such 251 permits were issued in September, 1906, and 198 in September, 1905. The values represented were, in 1906, $1,801,905; in 1905, $1,091,512.

A falling off is reported in permits for additions and repairs to buildings and for construction of frame buildings. For such work there were 912 permits issued in September of this year and 826 last year.

Another means of showing the enormous growth of the valuation is the receipts of the office. In past years the receipts for permits have never exceeded 62 per cent. of the expenses of the office. Up to August 31 of this year the receipts have equalled 115 per cent. of the expenses. The September recipts have not been computed.

The following is a comparative statement of the building operations in St. Louis for September of this year and last:

	September, 1905.		September, 1906.	
Style.	Permits	Total Cost.	Permits.	Total Cost.
Brick (new)	198	$1,091,512	251	$1,801,905
Additions	115	407,907	135	112,150
Frame (new)	444	179,761	455	103,379
Additions	69	10,585	71	13,635
Totals	826	$1,689,765	912	$2,031,069

The purchase of a tract of land for the erection of a new brick plant by the Evens & Howard Fire Brick Co. indicated that that company will remove from its present location on Manchester Road in the near future; 222 acres at the intersection of the Hanley Road with the outer belt line west of Clayton has been acquired by the company. The building of the plant has started and it will be completed about next April. The plant will have a terminal switch connecting it with the belt line, which has recently been completed.

It will be four of five years, however, according to the statement of the officers, before the old site is abandoned. The exhaustion of fire clay in the Cheltenham district is the reason for moving. The company is making provision for the future in purchasing the new land. A good quality of fire clay underlies the new tract at a depth of about sixty feet. The brick plant will be started with a capacity of about 100,000 bricks a day; 75,000 bricks a day are being turned out daily at the old plant.

It is said that it will only be the matter of a few years when practically all other brick concerns will be obliged to leave Cheltenham district and locate on new clay beds. The clay deposits inside the city limits have been mined continuously for over fifty years and from a small beginning the industry has grown until St. Louis is now one of the largest brick manufacturing centers in the country. The total length of the network of mining tunnels under the Cheltenham district is said to be over seventy miles.

William H. Journey, of Grafton, Ill., placed on exhibition at Jerseyville, Ill., recently, a sample of building brick made from shale at Grafton. A brick company was incorporated for $100,000 a few weeks ago, and the company expects to be in operation within a few weeks. The shale is found immediately north of Grafton, on the Jerseyville road, where the plant will be located.

The Columbia Clay Works of St. Louis was incorporated a few days ago with a capital stock of $71,000, fully paid. The object of the company is to do a general mining business. The incorporators are: Albert Baum, August Ahrens, Wm. R. Gentry, H. W. Schaeffer, E. H. Larkin and others.

William R. Gentry, one of the stockholders, says that the Columbia Clay Works operated a clay mine half way between Columbia and Waterloo, in Monroe county, Ill. A large factory will be erected and work will begin in the next few weeks. The firm will manufacture sewer pipes, vitrified brick and other articles. The officers held their first meeting on September 27, and organized and elected officers.

At a meeting of the shareholders of the St. Louis Clay-Burning Company, held at the office of the company October 3, the company voted to diminish the capital stock of the company from $200,000 to $180,000. A. Saint.

THE CLAY-WORKER

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227-233 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

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CURRENT COMMENT.

This is the time of the year when the kiln fire begins to look better to the average worker than the clay pit.

* * *

A man of honesty is like a clay bank, in that it may look good, but it takes an actual test to bring out all its qualities.

* * *

A skyscraper calls for a good many brick; but it is tenement construction that the brick dealer counts on to eat up his goods.

* * *

Interior waterway transportation is getting a lot of speculative and promoting attention these days and deserves more real attention.

* * *

Some idea of the inherent respect of humanity for brick may be had from the fact that any man takes it as a high compliment to be called a brick.

* * *

It is possible to spend a lot of time worrying over things which ought not to be done, which might better be spent in doing things that ought to be done.

* * *

The same spirit which feeds with pleasure on the reports of the misdeeds of others, if not held in check, will also beget envy of those who are doing good instead of bad.

* * *

It is said that about three million more freight cars were built last year. Judging from the present car shortage, one would imagine that about three dozen would cover the case.

* * *

If tile manufacturers could manage some way to get the farmers in their community to take and read that book, "Engineering for Farm Drainage," by C. G. Elliott, or would read it themselves and tell the farmers about the benefits of drainage, how to get it and what it will cost, it would help the sale of drain tile considerably. Why not experiment a little with this idea during the winter?

* * *

The man who accomplishes things and speaks not of them is hiding his light under a bushel, while the man who boasts but does not accomplish is showing off a bushel without the light.

* * *

Make it a point to promptly and courteously answer all correspondence, no matter how trivial some of it may seem, for while you will waste a few postage stamps at it, your gain will be so much in the end that you will forget all about that.

* * *

Among the side lights to the clay industry which should not go unobserved or unattended by progressive members of the craft, is that of irrigation matters. For this is not only good for the country in general but is of more or less specific benefit to clayworkers.

* * *

That melodious refrain, "Meet me at St. Louis, Louie," will come to all who read the official announcement on page 399. We trust it will be hummed and whistled incessantly until the eventful week of February 4 to 9, when the members of the N. B. M. A., and affiliated bodies, will, for the first time, gather in convention west of the Mississippi river.

* * *

And now it's the New York Evening Journal giving a boost to concrete construction, under the caption, "With the Dirt from Your Cellar Build Your House." They slipped a cog there by not saying sand, for even those with axes to grind don't claim that cement and dirt will work together. This and a lot of other things might be explained to such editorial writers. But what's the use? They forget today what they wrote about yesterday, and are hunting for something else that they can make look startling for a day—and then forget about it.

A REMINDER AND A SUGGESTION.

With the coming of frosty weather, and the putting into commission once again of stoves, furnaces and fireplaces, the city fire departments are kept on the jump, because of defective flues and one thing and another, and the prudent man makes a careful round of his house before retiring at night, lest there be some chance overlooked for the place to take fire while they sleep. To those who have followed the trend of events, too, it is a reminder of the subject of fire prevention, and suggests that during the winter months when the brick people are not as busy as they are at some other time, we should give a liberal amount of attention to this subject. It goes without saying that all brick people are willing to give some thought to the subject and are anxious to help promote it in every practical way, because it means better business for the brick and other clay product people, as well as better homes and more safety. The trouble is, to know just where and how to give attention and thought that it may bear good fruit. It is recommended by the leading promoters of this subject that building requirements should be more exacting. The position is even taken at times that people will only build as well as they are compelled to build, and, that in the interest of the safety of our cities, they should be compelled to furnish a larger factor of protection against fire. There is no question, either, but what this does good, for we all know there are lots of people who expect to be, and must be compelled to do, certain things which they ought to do. Still, there are other people who differ from these materially and chafe under the idea of being forced to do anything. They object to any interference with their personal ideas or intentions, and quite frequently people of this kind can be persuaded or induced to do lots of things which they could not be compelled to do by any forceful urging. Some will only need to be reminded of these things to be inspired to do what is right, for they believe that the doing of that which is right will bring its reward in time. It will, too, but do you know the greatest inducement one can offer to persuade even a good man to do right is to show him where he can pick up dollars as he goes along the path of right. The suggestion contained in this is, that while we are striving for more stringent building regulations we might profitably give attention to this inductive side as well as that of compulsion. In other words, make provision to lighten the taxes on buildings that are made fireproof.

ECONOMY OF FIREPROOF BUILDINGS.

As it stands now the main inducement that a man has to build fireproof, besides that of a desire to do the right thing, is the main direct financial saving, the cost of insurance. Now then, if it is cheaper to insure a fireproof structure, it should also cost less to maintian a city fire department where buildings of this class prevail. A saving there means money saved for any city, and if a fireproof building will save the city money, there is good logic in the argument that the city should tax this property less than that which is more subject to damage by fire. In short, the better a man builds, the less he needs of this protection, consequently the less taxes he should have to pay. Many enterprising cities, as an inducement to new industries, pass ordinances rendering them immune from taxation for five years. Would not something of the same kind as an inducement for fireproof buildings encourage that idea considerably, too? Possibly, though, it would be better to have an ordinance graduating the taxes so that the fireproof structures at all times pay less in proportion than the fire trap. That, however, is a mere matter of detail. What we are after now is simply to encourage agitation to the end that we may have some measures of this kind that will offer better inducements for better buildings to go along with ordinances restricting fire hazards. The details can come later. Meantime, of course, we should continue to keep alive the idea of educating people at large for the benefits of fireproof construction and methods by which it may be attained without excessive cost, and to this end we should also lend a receptive ear to the idea of having a fire prevention day, as was set forth in these columns recently. Let us keep the matter alive, it is a "burning question," both figuratively and literally speaking, and one that grows more important as the country grows older and more thickly populated.

A STUDY IN STATISTICS.

That interesting annual bulletin, the Statistics of the Clay-Working Industry, in 1905, by Jefferson Middleton, is now out. It is interesting, not only because it is a criterion of the times for the product of clayworking industries, but it furnishes food for thought and gives us a chance to study the clayworking industry in a logical manner. The report informs us that the clayworking industry shares in the general prosperity of the country in 1905, doing considerably better than it did in 1904, when, though it was a prosperous year, the clayworking industry had a sort of dog fall, that is, just about broke even; 1905 was a great year in the building industry, the total gain in building operations from 48 leading cities of the United States being something over $178,000,000, or approximately, 38 per cent. It is fair to assume, too, that building operations in the minor towns and country points show the same percentage of gains. With this gain and the fact that other building material, such as lumber, has become scarce and high in price, there is nothing left for the clayworking industry to do but to grow bigger. Moreover, the advent of sand-lime brick, concrete blocks and concrete construction does not seem, from this report, to have materially interfered with the splendid progress of clay products, and the most cheering thing about it all is that the year 1906 gives promise of being even better than 1905, and at present there is nothing in sight but plenty of prosperity and progress in the clayworking industry, as a whole.

VALUE OF CLAY PRODUCTS.

The total value of clay products, as shown in this report for the year 1905, was $149,697,188, as against $131,023,248 in 1904, a clear gain of $18,673,940, or 14.25 per cent. The average price obtained for brick the whole country over was $6.25, as against $5.97 in 1904 and 1903.

In the following table will be found a comparison of the several varieties of clay products marketed in 1904 and 1905, showing the actual gain or loss in each variety, together with the percentage of gain or loss.

Value of the products of clay in the United States in 1904 and 1905, with increase or decrease:

Product .	1904.	1905.	Total Increase 1905.	Percentage of increase in 1905.
Common brick	$51,768,588	$61,394,383	$9,625,825	18.50
Vitrified paving brick or block	7,557,425	6,703,710	853,715	*11.30
Front brick	5,560,131	7,108,092	1,547,961	27.84
Fancy or ornamental brick	300,233	293,907	*6,326	*2.11
Enameled brick	545,397	636,279	90,882	16.66
Fire brick	11,167,972	12,735,404	1,567,432	14.04
Drain tile	5,348,555	5,850,210	501,655	9.38
Sewer pipe	9,187,423	10,097,089	909,666	9.90
Architectural terra cotta	4,107,473	5,003,158	895,685	21.81
Fireproofing, hollow building tile or blocks and terra cotta lumber	3,629,101	4,098,793	469,692	12.94
Tile (not drain)	3,023,428	3,647,726	624,298	20.65
Miscellaneous	3,669,282	4,209,543	540,261	14.72
Total brick and tile	105,864.978	121,778,294	15,913,316	15.03
Total pottery	25,158,270	27,918,894	2,760,624	10.97
Grand total	131,023,248	149,697,188	18,673,940	14.25

*Decrease.

This table shows, in a most striking manner, the lines of activity. It will be observed that only two varieties of wares showed a small decrease, namely, the vitrified paving brick products and the fancy or ornamental brick product, while every other brick and tile product and the pottery industry also showed increases, some of them quite large gains, the largest being in the products used as structural materials, and especially in those materials entering into the construction of fine buildings, such as front brick, architectural terra cotta, structural tile (including roofing, wall and floor tile), enameled brick and fireproofing.

THE RANK OF INDUSTRIES AND STATES.

The most refreshing thing about this report is the remarkable growth in the common brick industry, and the fact that this growth is generally distributed. It shows a wide spread tendency to the building of better homes, and shows, as has been pointed out heretofore, that the country is not only prospering, but is learning how to use its prosperity to the best end, and this, more than any other one thing, augurs well for the future, not only in the brick business, but for the welfare of the country in general. The slight falling off in fancy or ornamental brick does not, in the face of the returns, indicate any loss in the popularity of clay products for decorative front work, etc., because front brick showed the greatest percentage of increase of anything, and architectural terra cotta comes next in the percentage of increase, thus indicating strongly the growing favor of clay products in the architectural world, as does also the increase in enamel brick. Consequently the decrease in fancy or ornamental stock may be attributed to the general architectural tendency toward simplicity. There has been during the past two years a strong tendency to get away from what is commonly called "gingerbread work," and return to more simple and imposing designs. Just what happened to the paving brick industry is something of a puzzle, until one goes back and studies the table for a number of years, in which it is found that 1904 was a remarkably good year, and the price reached the highest point recorded. As compared to 1903 the value of paving brick in 1905 shows a moderate increase. The average price for paving brick during 1905 was $10.07, as compared to $10.28 in 1904.

The rank of the leading States in the industry remains practically the same, with the exception that New York has crowded Illinois out of fourth place this time. The leading States in the order numbered are: Ohio, Pennsylvania, New Jersey, New York, Illinois, Indiana and Missouri.

COMMON BRICK INDUSTRY GROWING.

The common brick industry, the most widespread of all the clayworking industries, makes up a little over half of the brick and tile value, and 41 per cent. of all clay products. The number of common brick increased from 8,665,171,000 in 1904 to 9,817,355,000 in 1905. New York continues to be by far the largest producer of common brick, reporting over one and one-half billions, valued at $10,297,214. The next largest producer of common brick is Illinois, which marketed 1,125,024,000 in 1905. The only other State producing over a billion common brick was Pennsylvania.

FRONT BRICK LEADS IN INCREASE.

The greatest per cent. of increase in all clay products is that of front brick, the production of which jumped from 334,351,000 in 1904 to 541,590,000 in 1905, a gain of 24.69 per cent. The average price was raised, too, increasing the gain in value to 27.84 per cent. Pennsylvania was the leading State in this product, and the average price in that State was $12.81. The next largest producer was Ohio, with an average price of $12.01. New Jersey was third in quantity, but beat the leading States in average price, the price there being $15.86. Illinois, which came fourth, only realized an average of $11.44 for her front brick. On account of this the value of the Illinois product was exceeded by Missouri and by Virginia. The percentage of front brick in relation to the total of brick and tile products, was raised a little, it now being 5.84 per cent., or 4.75 per cent. of all clay products. In 1904 these percentages were 5.25 and 4.24.

TERRA COTTA TO THE FRONT.

We can read the signs of the times in the rise of architectural terra cotta, which showed an increase during the year of nearly a million dollars, or 21.81 per cent., and is now 4.11 per cent. of the brick and tile products. This industry is more concentrated than any other, that is, there are fewer of them in any given State. In fact, the reports say that only four States show more than three industries. New Jersey is the leading State and furnishes nearly one-third of the entire amount. New York has second place. Pennsylvania shows up as third, and California, away over on the west coast, is the only other State listed as furnishing this product, except those under the head of "Other States." There is apparently room, in the face of the rapid growth shown by these figures, for considerably expanding the use of terra cotta and increasing the number of industries, with a view to obtaining more general distribution, so as to encourage its use.

FIRE BRICK MAKES GOOD.

Fire brick, which is one of the most important items in the clayworking industry, showed a healthy increase in value. Pennsylvania is the leading State in this product, turning out 312,470,000 9-inch brick, or their equivalent, valued at $5,771,795, at $8.47 per thousand. This represents over 45 per cent. of the total output of fire brick. Ohio was second in production, with a product valued at nearly a million and a half. New Jersey was third. Missouri was fourth in value, but exceeded New Jersey in quantity. The difference in value comes from the fact that in Missouri the average price was only $17.95, while in New Jersey it was $26.72. These four States produce 76.71 per cent. of the total in fire brick and no other State shows a million dollars' worth of this product, but Kentucky is climbing up nearer to this figure than any other, having reported $739,059 worth, exceeding by a little over $300,000 the product of New York in this material. There was a wide range in the average price, the lowest price being down in Tennessee, where only $10.79 was realized, and the highest in Massachusetts, where the average was $35.85. The general average was $18.73.

DRAIN TILE NEEDS PUSHING.

The drain tile industry shows a healthy growth, but the percentage of increase in this line though is not as much of the general prosperity of the rural districts should show. In other words, it has not kept pace with the increased use of building brick, and there is evidently plenty of room yet for mission work, with a view to extending the use of this product. The main production of drain tile is in the middle west. Iowa is the leading State, with Ohio ranking second, and Indiana, which was second in 1904, now taking third place, with Illinois ranking fourth. These four States produced tile to the value of over five million dollars, or 87.52 per cent. of the total of the country. It is probable that in the States named, the industry is as large as it is likely to grow, in fact, Iowa shows a decrease. But the fact that practically all the product comes from these four States illustrates forcibly that there is room in many other States for enlarging the drain tile industry. It is growing right along, too, but not as rapidly as it should under existing conditions.

A SATISFACTORY YEAR IN POTTERY.

Pottery shows an increase in value of nearly three million dollars; in fact, it seems to have been a very satisfactory year in pottery, and the increase in value during the year was about ten times as great as the loss which was scored in 1904. It is especially pleasing to note the increased proportions of domestic production as compared to imports, and a generally wider market for American potteries. There is room, of course, for a lot more good work along this same line. There was nearly twelve million dollars' worth of pottery imported, whereas the exports were only about one million dollars' worth. From these figures we can deduce that our consumption of pottery runs to over thirty-eight million dollars, and the domestic potteries have furnished about 71 per cent. of this, which is the highest percentage reached since 1902. However, as long as there is nearly 30 per cent. being imported, there is something for American potters to think about and work on.

A SONG OF DEGREES.

We show in simple manner,
And with a hope to please,
The work which is expected
Of those who hold degrees.

Through four long years of study
Athletics prove the key,
With drafts on father's check book
To get a glad A. B.

Next stage, the honorary,
Is made both wide and free;
Few men who gain distinction
Escape the LL. D.

But morning, noon and evening
The hardest work we see
Is keeping daily hustling
To hold a J. O. B.
—McLandburg Wilson in the New York Sun.

CONSOLATION.

Of course, at times things will go wrong
Just when you'd have them otherwise;
It's very hard to find a song
In every cloud that dots the skies;
But, after all, why fume and fret
Because the world is looking blue?
Why waste your time in vain regret—
Some others are worse off than you.

If your best friend should turn you down;
If yours is not the best of health;
Or should your banker skip the town,
And with him take your hoarded wealth;
What'er your woes, don't sit and whine,
And don't give up, whate'er you do,
But please just ponder on this line:
Some others are worse off than you.

When all the world seems upside down,
And nothing starts to come your way,
Don't sit and moan and sulk and frown,
And curse your luck day after day;
But dare to smile whene'er things go
Contrariwise, and keep in view
This axiom tacked on below:
Some others are worse off than you.
—William Purdue, in Indianapolis News.

HUMOROUS LOGIC.

Great foresight was displayed when Bacon was sent to Cuba with Taft. This prevents all possibility of an embalmed beef scandal.

A western woman has just discovered the reason for the downfall of man, in early days. Eve had no mother to guide her.

A man named Doolittle was arrested the other day for stealing a watch, and while he probably looked upon the transaction as a Doolittle time taking, it will probably end by shortening up the transaction to "Do-time."

We notice that the Brooklyn man who had no bones died at the age of 21. If all men in New York State who were lacking in backbone had died at that age the State would be better off today.

Missouri has unquestionably been struck by a moral wave. The city attorney of Kirkwood, Mo., has just introduced an ordinance to make lying a misdemeanor punishable by fine. Is this a move to cleanse the morals of the community or to make millionaires of the attorneys?

When President Roosevelt looked over his cabinet the other day for the proper man to send to Cuba, to help settle the Cuban troubles, he evidently knew that they would only listen to a man who was at home recognized as big and broad. Taft had the necessary qualifications. The scales show that.

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IF YOU KNEW the importance of controlling the draft of your kilns and boilers, you would not be without a draft gage.
We have all kinds in stock.

The Richardson-Lovejoy
(See page 435.) Engineering Co.

WANTED, FOR SALE, ETC.

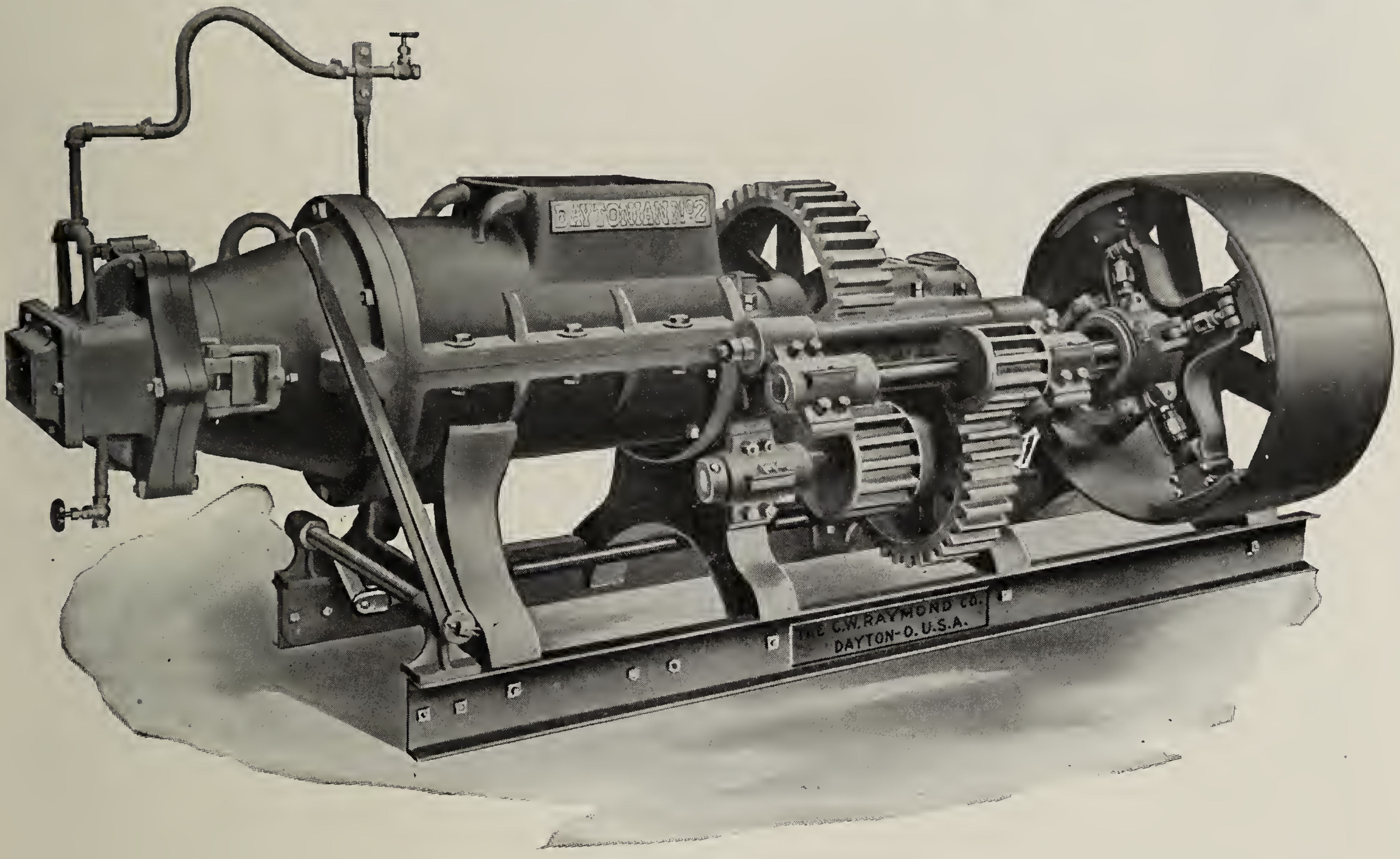
WANTED—One tile machine, pug mill, cutting table and disintegrator. Address
STORM LAKE,
10 1 50p Care Clay-Worker.

FOR SALE.
One Raymond "999" side cut brick machine, in first-class condition. Abandoning yard and have no use for it.
HYDRAULIC BRICK CO.,
10 1 d Louisville, Ky.

WANTED—All persons entering upon the manufacture of sand-lime brick to get started right and keep right by corresponding with one who knows the business from beginning to end and who can save you money. Address
ENGINEER,
10 3 c Care Clay-Worker.

For Sale, Wanted, Etc., Ads Continued on Pages 417, 418 and 419.

MAINTENANCE.

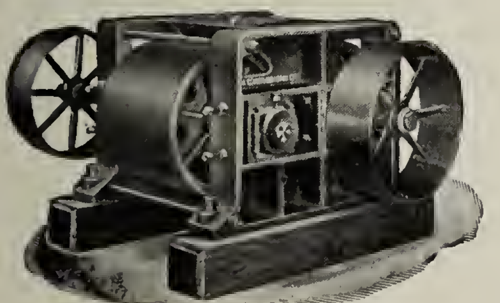

DAYTONIAN No 2
THE C.W. RAYMOND Co.
DAYTON-O. U.S.A.

Capacity 15,000 to 25,000 Brick Every Ten Hours.

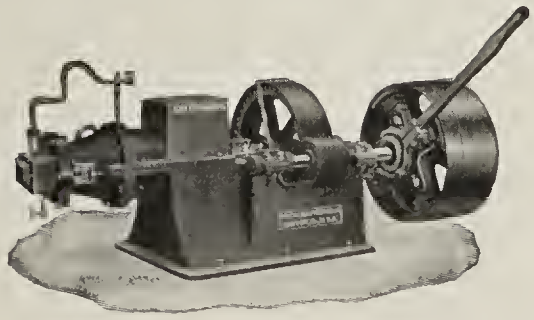
That Brick Machinery **will** wear out and occasionally break is an unassailable truth; therefore it is necessary that the user exercise care in his selection, investing his funds for improvements in machinery built to withstand the continued strain of brickworks service. Repairs are directly chargeable to expense; a large expense account cuts deep into the annual dividends, and repairs **are** expensive.

Raymond construction is simplicity in design, a generous margin of safety, and correct principles. The machine shown is illustrative of its class, and is the smallest of the series, being built on one set of skids, resting on one solid foundation from front to rear. This is the "Raymond idea" and the best evidence of its practical utility is the fact that other manufacturers of this class of goods have striven to equal it with their copies, but without success.

We manufacture everything required for use on a brick yard from the beginning to the end.



The
C. W. RAYMOND CO.
Dayton, Ohio.



Written for The Clay-Worker.

KANSAS CITY BRICK AND BUILDING NEWS.

BUILDING OPERATIONS for the past month were quite active, in spite of the fact that the values of building permits for the entire month are far below the same month of last year. In September of last year the permit for the Long building, now nearing completion, and then valued at $700,000, was taken out, and the total value of permits for that month was $1,399,645, while for the last month the total value of permits was $781,540, or $81,800 more than the corresponding month of last year, if the Long building is not counted in that month. If the city continues to make a good showing for the three remaining months of the year, it will be found with a much better showing than it made last year. Its record for the first nine months of the year being quite a little ahead, it having advanced from eighth to seventh place in the percentage of increase over the previous year, in a list of twenty-six of the principal cities of the country.

The 14-story Long building is now nearing completion, and the steel frame of the Scarrett building is up to the tenth floor. Several other steel buildings will soon be commenced, the contract for the Bank of Commerce building having been let only last week. It will be a 15-story steel structure. Builders here are going in for steel structures now, there being little activity in the concrete line, probably owing to the fact that cement has been held at a very high price throughout the summer, and most people who have watched contractors having concrete structures to build are inclined to feel afraid that the contractors will be tempted to use too little cement and more of the cheaper materials. Unquestionably there is a great temptation, while with brick there is no mixing to fear, the kind wanted being selected at the start, and that ending the chance for crooked work.

It is very probable that within a few more months all the brick burned in Kansas City will be classed as Kansas gas-burned brick, for the city has granted a natural gas franchise, and it specifies that gas is to be used for manufacturing purposes at as low a price as furnished by the same company in any other cities. The brick manufacturers of Kansas City, Kans., are now using gas, and are well pleased with the results and the cost, so it is to be expected that the brick manufacturers of this city will avail themselves of the opportunity to use it as soon as it is possible. Outside manufacturers, who are not yet in reach of gas, may also profit by turning gas into as large a city as this, for it will unquestionably have a considerable effect on the demand for coal in this section, and the brick manufacturers should find themselves in pretty good demand by the coal men who have something to sell.

There has been a world of trouble during the past month on account of the inability of the railroads to furnish cars for handling the business in the Kansas gas belt. Brickyards down there have been flooded with orders, and have been turning out brick to fill them, but the cars were not forthcoming, and as a result many yards are full of brick and many contractors are swearing vengeance, and the salesmen who sold the brick are hiding out, for they have all run out of funny stories with which to interest the angry contractors when they come around to enter another formal complaint about their not getting brick as promised. Salesmen now know better than to make any promises. It is customary now agree to have the brick ready for shipment by a certain time, and to load them as soon thereafter as a car can be secured for them. It seems strange that cars can not be secured in which brick can be shipped, for anything outside of a flat car can be used, but there seems to be a shortage in all kinds of cars, especially at points where there is but one line of railroad. It is very likely that a railroad feels about the non-competitive point that the shipment will have to wait until they get ready to haul it, but that is a mistaken idea, and brick men should lose no time in letting the officials in on the secret that if they are not able to ship brick promptly the orders are always countermanded and given to some other plant, where shipping conditions are better.

Paving brick plants are generally reporting their entire product disposed of until next spring. It will take a solid winter's run with most of them to fill orders already booked. Builders are not in quite so great demand, and still there is plenty of demand, if the railroads would only do their part in making prompt delivery.

It begins to look now like there would be plenty of business in the South and West for several more good vitrified plants, in fact, a goodly number of them; but on the other hand it does not appear to be exactly the right thing to figure on new pressed brick plants out here. There has been a much lighter demand for pressed brick this year, and a great increase in the demand for vitrified, and if the tendency continues, it is safe to say that within another five years most of the buildings will be constructed of vitrified brick, and plants turning out that class of goods will be busy.

The Kansas City Paving Brick and Tile Company has been shipping several hundred thousand brick to Independence, Mo., where they are being put into the streets. They have also furnished a good many brick for small paving contracts in this city, and there has been no large contracts let. The lack of united effort on the part of the brick men of this city is holding back brick paving, and turning the city entirely over to the people who deal in other kinds of paving material.

The Kansas City Hydraulic Pressed Brick Company report having but recently landed contracts for furnishing the brick for a new Masonic Temple in Springfield, Mo.; a new high school building in Oberlin, Kan.; and the Boston Store building in Wichita, the latter job including 150,000 face brick.

The Lyle Brick Company has been entirely unable to supply the demand made upon the plant now in operation, and has decided to put in another plant next spring, locating it on a similar bed of shale to the one being worked by the present plant. The new plant will be located on Harrison, near Fiftieth.

The Pittsburg Brick Company is reporting the final landing of a contract for 1,300,000 of their noiseless paving blocks for paving the streets of St. Charles, La. The same company has the contract to furnish all the brick that will be needed for constructing the new shops of the Kansas City Southern railroad, which are to be in Pittsburg, Kans.

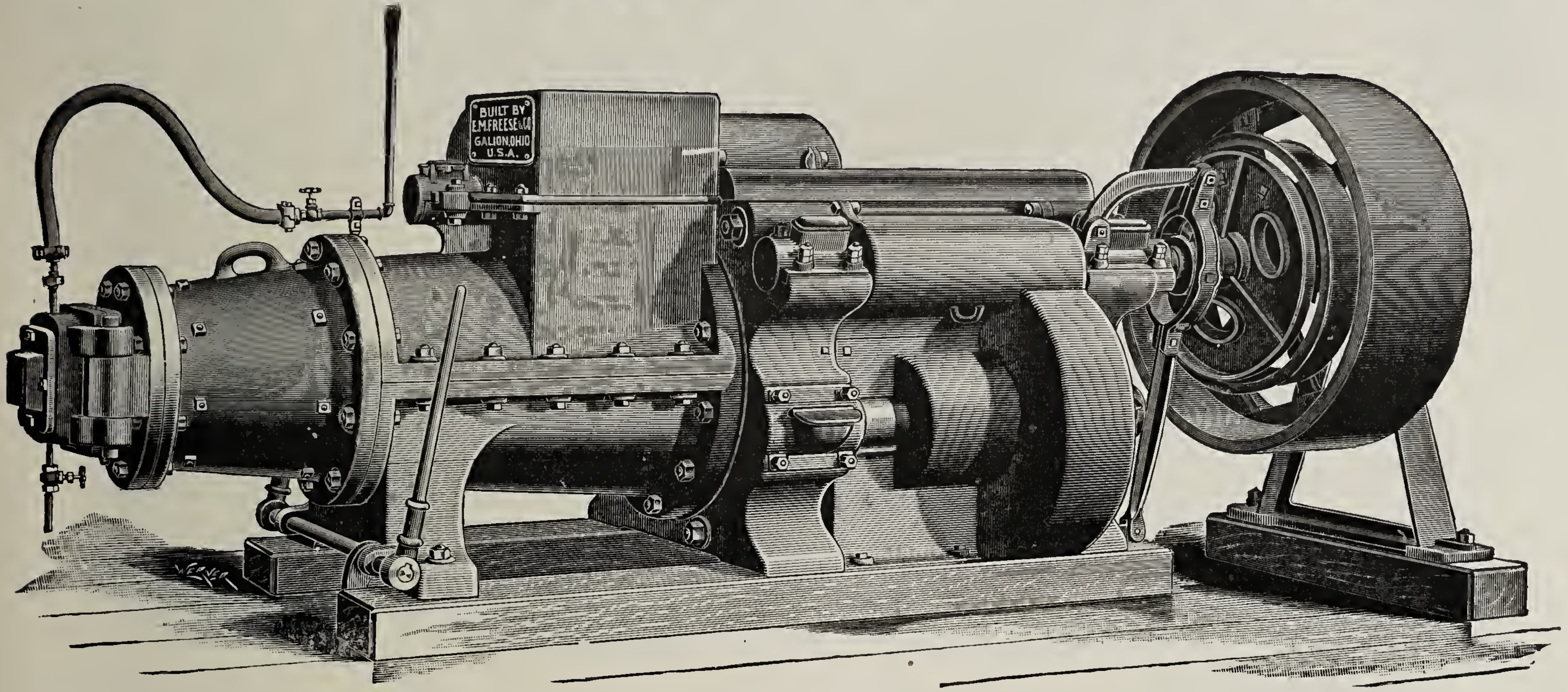
Fred Bentz has brought suit in the circuit court against the brick manufacturing firm of Flannagan Bros. for $4,500 damage for personal injury alleged to have been received a few weeks ago while he was working on a building being erected by them.

Edward D. Steger, of Bonham, Texas, and president of the Kansas City Gray Brick Company, which is building a plant in Bonner Springs, Kans., was a recent visitor to this city. "The plant will cost $100,000 and will be opened in sixty days," Mr. Steger said. "It will have a daily capacity of 60,000 brick, made of sand and lime by a new process. It will be the only plant of its kind in the State. Dr. H. A. Longan, of this city, is vice-president of the company and R. N. Soper is secretary and treasurer." Mr. Steger is the owner of a railroad which runs from Denison, Texas, to Bonham, and is also interested in several cotton seed mills. He was the world's fair commissioner from Texas.

F. A. Parker.

It is a peculiar fact, but it is generally the man who has the most whose wants are the largest.

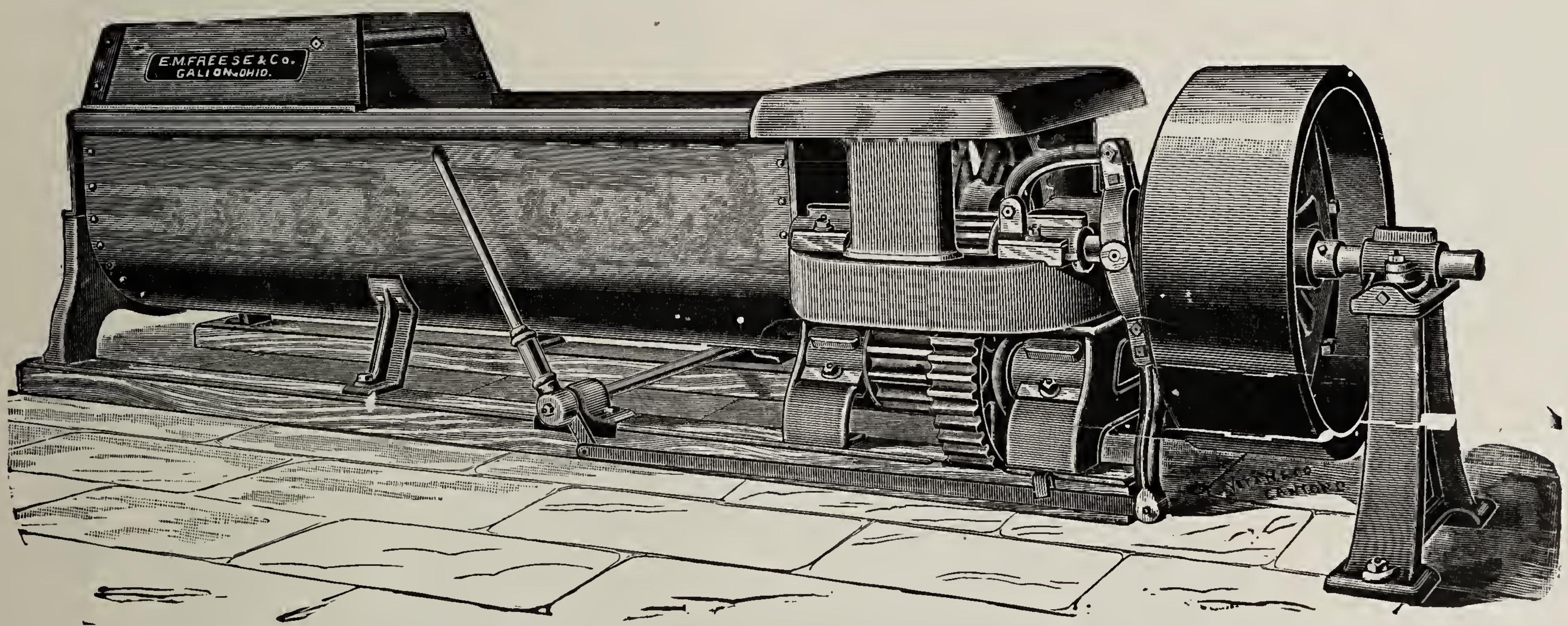
Our Mammoth Brick Machine


BUILT BY
E.M.FREESE & CO.
GALION, OHIO
U.S.A.

THIS MACHINE is built from new and improved design and has been found especially well adapted to the use of plants requiring large capacity and superior quality of brick. We build this machine in two sizes.

* * *

Our Pug-Mills Have Features of Great Merit.


E.M.FREESE & Co.
GALION, OHIO.

THESE PUG-MILLS have especial advantages. They can be adapted to the nature of the clay and will thoroughly temper and mix. Material of best quality and in generous quantity used in their construction. The workmanship is good and the clay is fitetd for making a fine quality of brick.

E. M. FREESE & CO., - - Galion, Ohio.

See Ads on Pages 460 and 461

Written for The Clay-Worker.

AMONG BALTIMORE BRICKYARDS.

A HURRIED ROUND of the yards here produced all the information that was in circulation at present, and taught us that Baltimore possesses many characteristic and delightful men among the manufacturers. Mr. Bartgis, of the Baltimore Vitrified Clay Company, tells us that they are supplying bricks for Norfolk, for the exhibition buildings, and the Virginia State Exhibition buildings. In Baltimore city they have contracts for three warehouses, six or more large buildings, and a number of small ones; also for houses in the west and northwestern section of the suburban district.

There is a tremendous stimulus at present in the suburban growth, plenty of land, beautiful rolling country. A trip out the Charles Extension, then on to Tousen and Green Spring valley, would teach any of us that which we do not know in the world of the "Home Beautiful."

Taken all in all, Baltimore, with the heart of it reconstructed, its extensions of artistic and modern homes, its surrounding country, typical luxury and opulence, is a city that is making itself felt in the East.

The residents and business men say Baltimore is as thoroughly awake and alert as any eastern city. We on the outside are inclined to doubt this, noting here and there evidence of past and present somnolence, but we do admit its sudden awakening, and glory in it, not because of any personal or particular reason, but because of the fact that the awakening of any city, in any sense, affects all other cities in a large sense. Along with the erection of large apartment houses, beautiful residences and warehouses, office buildings, etc., we note the tendency towards many two-story homes. These latter do not improve the beauty of a large city, but they do indicate the growth of it and demand for individual homes. The scarcity of houses for rental was quite a serious one before the fire. The demand was much in predominance of the supply and large rentals were paid for ordinary houses.

However, sufficient unto the day, etc., the city is growing. Builders have realized the demand and also the amount of money to be secured for themselves. Ere long we shall see many "nouveau rich," and without a doubt this is the class that circulates the money.

What would you say to two-story houses selling for $3,500, subject to $85 ground rent? Rather more than enough; yet such is the sum brought in Park Heights.

The labor question here is naturally one that requires ingenuity. The demand, at present, is great. The Canton railroad, Pennsylvania railroad and Baltimore & Ohio, along with city street improvements, are simply soaking the labor like so many sponges. One brick manufacturer states that he is going to import his labor from Carolina, then shut them up in the district of the yard, and allow them to know little outside of it.

Well, that is perhaps one way; but is it a good way? He evidently thinks so, and since he is willing to give it a trial, the others may learn from his experience.

A call upon Albert D. Klein, of J., 206 Courtlandt street, assured us that business conditions are absolutely the same; that while the brick manufacturers are busy, yet the price of bricks is low.

The Potee Brick Company is supplying bricks for the surrounding districts, and are shipping bricks to New York on the $5.50 freight basis. Bricks here are low and money tight. (Some of the men wish they were.)

For a fact, the supply of brick is low, and with the growing demand, not knowing the inside condition of things, one stands wondering. Along with the explanation is a trifle of rebellion, but rebellion well curbed. A case of corporation swallowing the smaller men. Human nature sympathizes, but might crushes right, if we can so strongly term it, and the right suffers.

The Baltimore Brick Company is naturally more than busy. They received the representative of The Clay-Worker very cordially, volunteering a general and rational statement as to the growth, progression and rapid beating of the pulse of Baltimore.

After the fire, Baltimore was so busily employed rebuilding and erecting warehouses, office buildings, etc., that now there must, of necessity, be a temporary lull. Consequently the erection of large business houses is below the normal, but erection of residences far, far above normal.

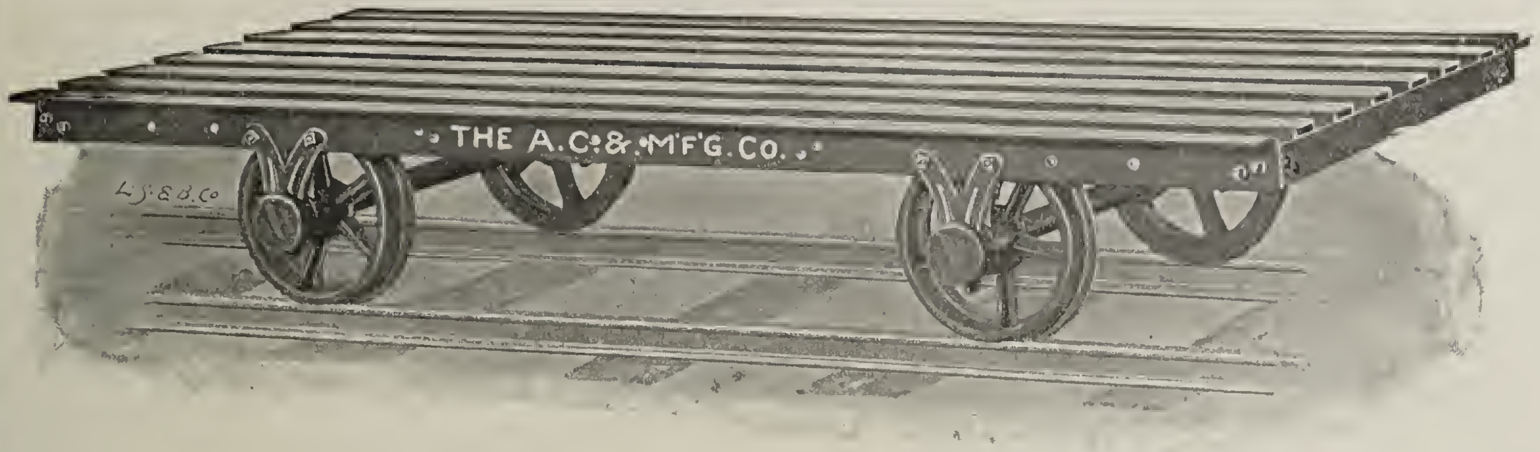
Burns & Russell, in the American building, have a great amount of business; in fact, they always have. At present they have contracts to supply bricks for two hundred houses on North avenue and Patterson Park, rows of two and three-story houses on Maryland avenue, a large warehouse on Hopkins Place; the new fish market, which will occupy a whole block and requires over a million bricks; the Maryland Institute. The Mount Vernon and Woodbury Cotton Duck Company requires 500,000 brick. Besides these are rows of houses on Fairmount avenue and Warren avenue, warehouse on South Charles street, store on Charles street, and a large residence. It will be seen that much of the rebuilt new district of Baltimore shows a majority of the Burns & Russell bricks.

Altogether, we can congratulate the brick manufacturers in general. With a mental handclasp to all Baltimore brick manufacturers and many wishes for their future prosperity, we bid them a temporary and lingering au revoir.

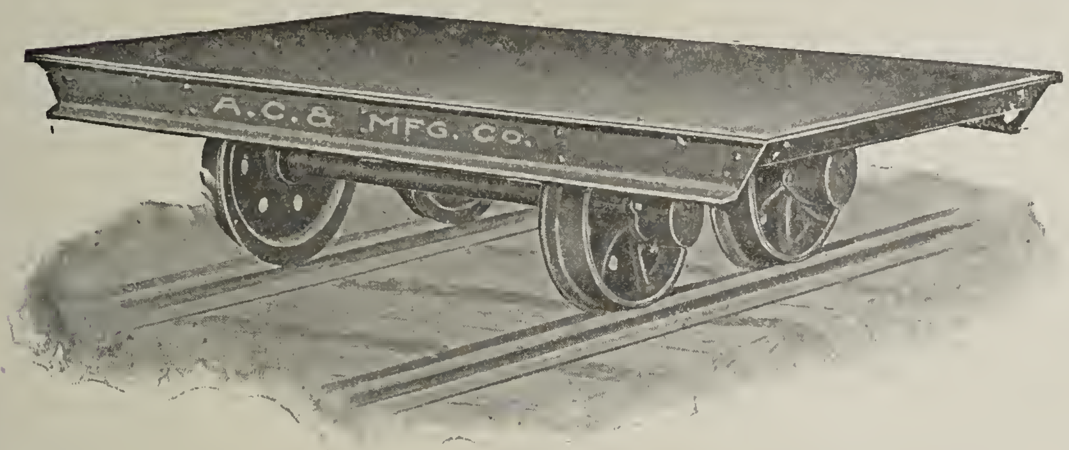
M. E. Lockington.

Marooned Mike—"That prisoner we have aft sez he's a New York cab driver, cap'n."

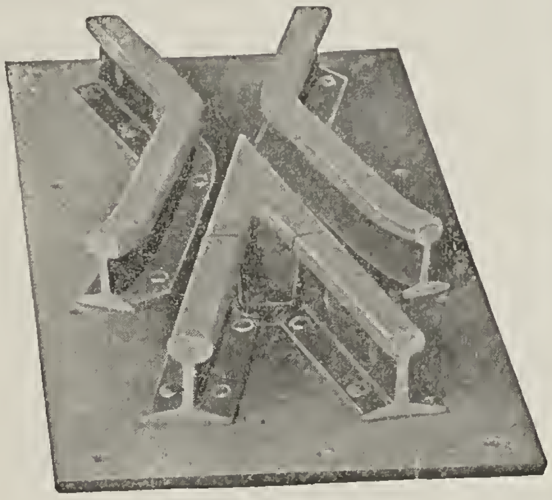
Captain Kutthrote—"Holy mackerel, to the sharks with him, and find out quick if the treasure we secured is safe."—Judge.



No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



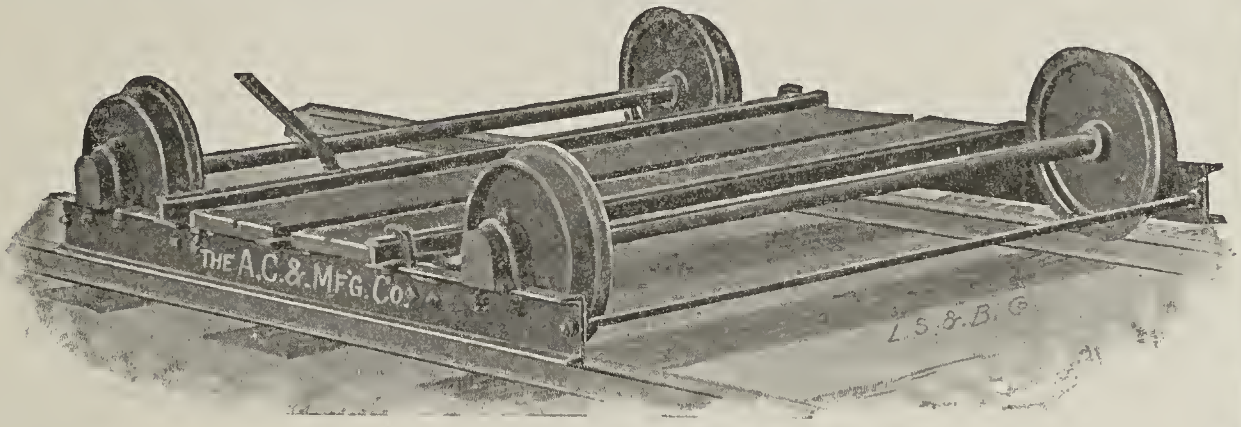
No. 1025. Steel Frog.

The Atlas Car & Mfg. Co.,

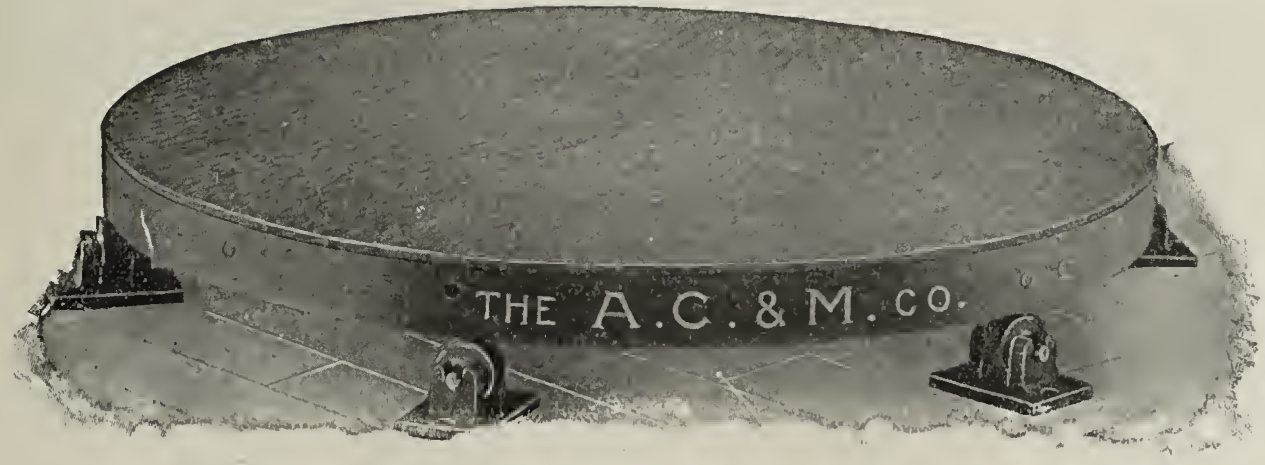
CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc. Also Transfer Cars, Turntables, Clay and Dump Cars.

No. A. Flanged Pallet.



No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for The Clay-Worker.

THE CHICAGO SITUATION.

AS WE ARE closing a year of unprecedented building prosperity in Chicago, and on the threshold of another year, big with promise of even greater structural achievements, the shadow of labor disputes, the old bogy of the builder and contractor, looms up, threatening to spoil glorious prospects with senseless bickerings.

The phantom of labor unrest has a new garb in this case, however, but its appearance is none the less unlovely. Instead of the oldtime out and out fights between employers and labor unions, interunion scraps now take the boards, and the employer is drawn into the struggle, willy nilly. The interunion warfare, plus the ancient and time-honored sympathetic strike on any pretense, makes the situation serious, and lockouts on a number of big buildings now nearing completion in the downtown district are among the possibilities if not among the probabilities. Such lockouts to which the big employers, their patience being well nigh exhausted, are being driven, would render fully 50,000 men idle and stop work on buildings costing many millions of dollars.

The building trades proper have not been actually involved in the dispute, which has been between the plumbers and steamfitters, but any union man is always on the edge of the whirlpool when a labor disturbance starts, and the whole building industry so far as the workmen are concerned is likely to be sucked into the vortex of confusion at any time. Already there has been serious trouble at the great new addition to the Marshall Field & Co. retail store, which is being put up in place of the old building at State and Washington streets, and here, bricklayers, hodcarriers and sheet-metal workers became involved.

Friday, October 12, the Contractors' Council met in the Chamber of Commerce building in the morning. They were somewhat incensed by the news which had just reached them that 200 more workmen had been ordered off the new Marshall Fied & Co. structure, leaving the $2,000,000 contract at a standstill practically. The dispute among the union men had been purely jurisdictional in character, and after a vain effort to induce the union leaders to settle their disputes among themselves, so as not to kill the present building activity in the city, the contractors issued an ultimatum to this effect: "Get to work or get out and never come back."

This brought the union leaders from the Associated Building Trades into a conference which lasted most of the afternoon and which was resumed again Saturday morning. On Friday evening the Associated Building Trades met and voted to stand by the plumbers in their dispute. The row was over the question of which union should have the work of installing the tubes and piping for the pneumatic cleaning process. It was really the war for revenge conducted by Martin B. ("Skinny") Madden, head of the Junior Steamfitter Union, and also of the Allied Building Trades, against the Steamfitters' Union which had refused to recognize the Madden organization of "Juniors." Saturday morning the conference of Friday afternoon between the Madden unionists, the steamfitters and the boss contractors, was resumed, and "Skinny" Madden won out.

It was agreed that the plumbers should have the job of installing the vacuum cleaning plant, and on this understanding they agreed to return to work, taking the bricklayers, hodcarriers and sheet-metal workers with them. The structural iron workers and the hoisting engineers who were on the point of walking out in sympathy with the plumbers were also expected to remain at work under this agreement. The steamfitters, however, it is predicted, will make a good deal of trouble before the present interunion row is finally settled. They are especially sore over the deal the contractors gave them on the Field job, because prior to the trouble they had been putting in a lot of overtime in order to hurry the work along before the hard frosts came.

It is a more serious quarrel than that between Madden and the steamfitters, however, which threatens to work in with that trouble, and possibly keep Chicago builders in hot water for the next few months. The factions among the teamsters swearing allegiance to Cornelius P. Shea and Albert Young, respectively, are fighting desperately for supremacy, stirring up riots now and again, as bitter as any they ever waged against strikebreakers, and it is thought not unlikely that Shea and Madden, who are generally credited with being hand in glove in the politics of the labor world, will seek to ally their forces in the building field for the purpose of crushing the secessionists. The steamfitters and their sympathizers will find allies in the seceding ranks of the teamsters under "Al" Young. The building contractors meantime will be in the sweet and enviable position of being between His Satanic Majesty and the Large Pond with no tall timbers visible in the foreground. Both sides will seek to oust the employer and the side that loses out with him will do its prettiest to make things unpleasant. The huge new county building, the Field building, the $2,000,000 Commercial National Bank building, and over $1,000,000 in smaller structures will be affected if the threatened trouble is not averted.

Thus far, however, it is encouraging to note, the records show that in spite of the falling off of the past month or so, building in Chicago has been exceptionally good. And it may be said that if October shows a falling off again from the latter part of September and its own first week, the blame can not justly be laid at the door of prospective or actual labor disturbances, but must be credited to the unusual attractions of a world's championship baseball series. All the live Chicagoans attended the games in spite of the chilling weather of the early days, and some of the material men and men of the trade generally are among "our very best fans."

For the first nine months of the year permits were issued for 8,274 buildings with a frontage of 214,887 feet and an estimated cost of $51,357,480, as against permits for 6,335 buildings with a frontage of 182,092 feet and an estimated cost of $47,737,115, for the first nine months of the preceding year—or an increase for this year of 1,939 buildings, 31,795 feet in frontage and $3,620,365 in estimated costs.

With two great railroad stations being talked of the chances are favorable that a still greater increase will be noted for next year. These two stations—one of them for the Pennsylvania and the other for the Chicago & Northwestern—will be the biggest undertakings that have been carried forward in Chicago for some time. Most nearly comparable to them is the Hawthorne plant of the Western Electric Company, the establishment of the Sears-Roebuck Company, and nearest of all, of course, the great LaSalle street station used by the Rock Island and Lake Shore roads. Even this station, however, will be thrown somewhat into the background by the two now being discussed.

The proposed station for the Chicago & Northwestern—which will probably be started first of all—is likely to be the larger affair of the two, although if the Pennsylvania is joined by the Chicago, Milwaukee & St. Paul, the Burlington and the Chicago & Alton in putting up a union station, as now seems not unlikely, there will be little to choose in size and probably little to choose in appointments between the two structures. The Chicago & Northwestern road's station will cover a complete block in width from Canal to Jefferson streets, according to present plans. It will run north and south from West Lake street on the north to West Madison street on the south, crossing West Randolph and West Washington streets. These thoroughfares will have to be maintained as such, and the

Northwestern road is now seeking permission from the City Council to cross these streets with their structure, leaving up-to-date, well lighted tunnelways for the thoroughfares. An immense amount of track elevation work will have to be carried on in carrying the tracks across West Lake street from West Kinzie street, along which many of the Northwestern tracks now run in entering the Wells street station. The tracks of the Chicago and Oak Park elevated will have to be raised considerably at this point in order to carry them across the railroad tracks.

Any one who recalls the constructive work and material put into the great LaSalle street station, will readily appreciate what a structural enterprise of this character means to the trade. The huge train shed which will extend over three long blocks will undoubtedly be of brick, and there is little doubt but that much of the front work and ornamental work on so large and important a structure will be of high grade front and brick and terra cotta. The appearance of the LaSalle street station, in the front of which the Purington Paving brick, furnished by the S. S. Kimbell Company, was used, shows what fine effects can be secured along this line, and of course all the other handlers of high-class front brick claim equal advantages and beauties for their wares. So that it seems likely that clay products will have another opportunity to show their superiority.

Two opportunities, for the Pennsylvania station will offer chances for a lot of fine work along the same line. This station will cover practically the ground now covered by the present union station which, trainsheds and all, runs from West Adams to West Madison streets, along Canal street.

The proposed new station will undoubtedly cover more ground latterly, and might, for all present plans tell, be carried across West Adams street. The Pennsylvania station is farther in the future, from present appearances, than the Northwestern station. But it is said to be sure, and the opening of bids before the close of next year is confidently expected. The Northwestern management has already secured much of the ground it will need in the construction of its station, and is preparing to secure the rest by condemnation.

Speaking of big contracts, a young man of this city with a reputation for success, energy and shrewdness, who is on the road a good deal representing a large company in the trade, put one over on himself the other day, and the good story is being quietly circulated by his "loving friends." It seems he went to another city to close up a deal. He wired news of his success in this, and in writing confirmation added to his letter this cheering news:

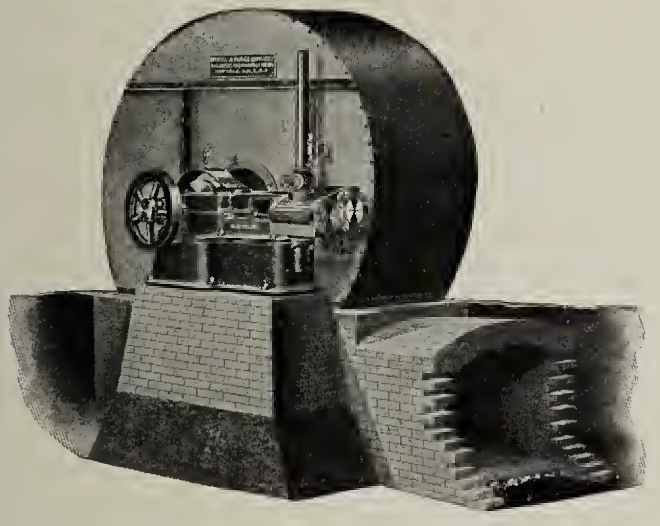
"I have before me contract for 400,000 square feet, etc."

When this reached the general offices there was some gasping. The young salesman is known as "Whirlwind Johnny" and all that, but a contract of this size from the particular corner of the map from which he had written seemed almost impossible. On top of their astonishment, however, came a telegram announcing that the deal had been closed for "400,000 brick." Then the G. M. sat him down and dictated as sarcastic a letter as Colonel Jim Stuart ever let through the Chicago postoffice.

The young man responded meekly that he was ready to do the right thing, but that he felt hurt that they should have thought it remarkable for him to have closed a contract for 400,000 square feet. Which piece of brass riveted nerve helped him some, but he has been "buying" for the boys pretty steadily since his return and would be happy to get away from town for a few minutes. It would really please your devoted scribe to make public the name of the young man and forward his photo for reproduction, but as he is somewhat heavier than your scribe and gifted with a longer reach, it seems at this time the better part of valor to refrain.

SCRIP.

BUFFALO WASTE HEAT DRYER.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

"BUFFALO" WASTE HEAT FANS take the WASTE HEAT from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "BUFFALO" FANS have water-cooled bearings where necessary.

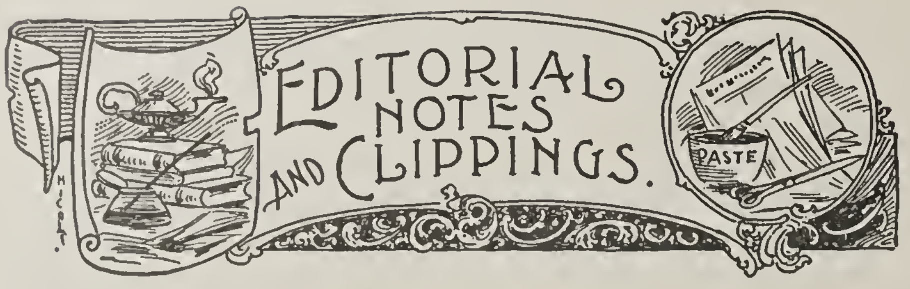
APPLICABLE TO BRICK, TILE AND TERRA COTTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.



EDITORIAL NOTES AND CLIPPINGS.

A company is to be organized at Meridian, Miss., to manufacture brick.

David Finn has purchased the tile factory of L. Simmons at Young America, Ind.

Mankato, Minn., is in need of a drain tile factory. There is a good demand for drain tile in that section, and it has to be shipped in at present.

The Standard Clay Product Company of Canton, Ohio, has been incorporated with $40,000, by A. H. Elliott, John Starkey, O. W. Myers and H. Corl.

The Rutland Fire Brick Company has purchased the plant of the Maryland Clay Works, near North East, Md., and will operate same in the future.

M. Shehan is at the head of a new company which has been organized at Kenilworth, near Asheville, N. C., to erect a brick manufacturing plant.

Articles of incorporation have been filed by the Burlington Brick and Tile Company, a new concern of Burlington, Iowa. The capital stock of the company is $10,000.

A bad cave-in at the bank of the Champlain Brick Company's plant at Mechanicsville, N. Y., resulted in the instant death of one man and serious injury to two others.

The Muscogee Brick and Terra Cotta Company is the name of a firm recently incorporated at Atlanta, Ga. The company has $75,000 capital stock, and will build a plant at Columbus, Ga.

The Evans Company (Ltd.), Sudbury, Ont., Canada, announce that they are getting their plant ready to install dryers and patent kilns during the winter, so as to be prepared for next season's work.

The Hodges Bridge and Tile Company, at Golden, Colo., was partly destroyed by fire recently. The plant had not been operated for a number of years, and the fire is supposed to be the work of tramps.

C. J. Deckman and S. M. Duty, of Cleveland, have purchased the Granite Brick Company's plant at Carrollton, Ohio, and will reorganize and incorporate it under the name of the Deckman-Duty Brick Company, with $30,000 capital stock.

R. C. Gangewere, superintendent of the A. G. Kahn Brick Company's plant at Selma, Ala., writes that the plant is running full handed, and has turned out this season nearly 1,000,000 brick. A new Thew steam shovel has recently been installed.

The Cumberland Clay Manufacturing Company has been organized at Carlisle, Pa., for the purpose of mining kaolin and other clays, and the manufacture of brick, tile, pipe and other clay products. H. S. Rich, H. B. Lutz and A. R. Rupley are interested.

The Federal Clay Manufacturing Company of New Jersey, a subsidiary company of the National Fire Proofing Company, has filed a certificate of decrease of capital stock from $5,000,000 to $100,000. President W. D. Henry, of Pittsburg, states that no significance is attached to the action.

The Standard Brick Manufacturing Company of Evansville, Ind., has recently booked some unusually large orders, among them being a contract for the brick for the St. Boniface Sisters' Home, and for a large flat building in Evansville, and for the new building of the Farmers' and Citizens' Bank, at Howell, Ind.

The Buffalo Forge Company, Buffalo, N. Y., has installed dry kiln apparatus at the plant of the International Harvester Company, West Pullman, Ill.; the Oval Wood Dish Company, Transe City, Mo.; the National Body and Box Company, Pontiac, Mich. They have fitted the Lowell Cotton Mills, at Lowell, N. C., with their air washer and humidifier. They have also shipped twelve of their down draft forges with blowers, exhausters, etc., to the Secondary Industrial School, at Columbus, Ohio, and twenty of the same sort of forges for the State Manual Training School, Ellendale, N. D.

Clinton, Mo., is to have a new paving brick plant. M. D. Lightfoot, formerly of Humansville, Mo., will have the management of the plant.

The Hamburg Vitrified Brick Company, Hamburg, Pa., recently booked an order for one and one-half million paving brick for the town of Bloomsburg.

The Roanoke (N. C.) Brick Company has been organized to manufacture brick. The capital stock is $15,000. The incorporators are J. A. Alston, W. W. Kay and George W. Adams.

A. F. and A. E. Barron, of Barron dryer fame, of Chicago, Ill., have purchased forty acres of land at Weston, Ont., Canada., on which there are excellent clay and shale deposits, and will erect an up-to-date plant of 100,000 daily capacity.

George H. Tefft, secretary of the W. S. Dickey Clay Manufacturing Company, Kansas City, Mo., was recently honored by being elected to the presidency of the Manufacturers' and Merchants' Association, one of the important commercial organizations of that city.

The Kaysville (Utah) Brick and Tile Company has filed articles of incorporation. The company is capitalized at $50,000 and the incorporators are J. R. Barnes, J. Dern, S. M. Bamberger, S. C. Baldwin and Thomas J. Smith. They will manufacture brick, tile and pipe.

The new plant of the Humboldt Brick Company, at Humboldt, Neb., started operations September 26, under very favorable conditions, and is now turning out a fine grade of brick. The plant is equipped throughout with modern machinery and will be run to its full capacity through the winter.

The capital stock of the Vigo Clay Company of Terre Haute, Ind., has been increased from $25,000 to $100,000. The object of the company in increasing the capitalization is to enter in the manufacture of vitrified brick on a larger scale, in order to meet the increased demand for that product in that section.

Fred Bentz brought suit in the circuit court recently against Flanagan Brothers, brick manufacturers, Kansas City, Mo., for $4,500 damages for personal injuries alleged to have been received da few weeks ago while Bentz was working on a building being erected by Flanagan Brothers on Grand avenue, between Twelfth and Thirteenth streets.

The Harrisburg Clay Company, Mount Holly, Pa., has purchased 60 more acres of clay land. The company is erecting a large building to be used in the washing of clay. The demand for the product of the company is immense and they have orders on their books to keep them running day and night for some time to come.

The Gillett Brick and Tile Company of Woodhull, Ill., is installing an electric light plant of its own at the yards and will furnish its own illumination to light the plant. This is done so that they can work extra hours this fall and winter and thus be enabled to keep up with their orders for the Gillett hollow dovetail brick. They now have orders that will keep them busy the balance of the season.

W. Benjamin Davis, Richmond, Va., who is now operating a brick plant at Richmond, Va., of 40,000 daily capacity, and one at Manchester, Va., of 20,000 capacity, will add a stiff mud equipment to his Richmond plant. He will be glad to have manufacturers of stiff mud machinery quote prices and send catalogue. He will also put in a dryer to enable him to run the plant the year around. He wants to make these improvements during the winter months.

The Old Dominion Brick Company, with headquarters at Scranton, Pa., will build a large plant at Cape Charles, Va., for the manufacture of sand-lime brick. The officers of the company are H. A. Knapp, president; L. M. Sturgis, vice-president and general manager; L. Stipp, second vice-president; John P. Butler, secretary; Victor L. Peterson, treasurer, of Scranton. The directors are C. P. O'Malley, F. E. Brundage, E. A. Stevens and John Taylor, of Scranton.

Henry Robinson, president of the Robinson Clay Products Company, Akron, Ohio, died at his home in that city of heart failure, September 21. Mr. Robinson was sixty-two years old, and had been identified with clayworking interests nearly all of his busy life. He moved to Akron from England when but eighteen years old, and ten years later started in the sewer pipe business with his brother. The industry has grown until now the products of the company are known the world over;

(Continued on page 418.)

Draining Clay Pits.

For this purpose you need a pump that is simplicity itself—one that will handle any kind of dirty, muddy, gritty liquid without suffering the least injury, in short a

PULSOMETER STEAM PUMP.

We don't ask you to take our word for these statements. To responsible parties who will state for what purpose and under what conditions they wish to use it, we will make a special trial proposition. Write for our booklet which tells all about these pumps.

The Pulsometer Steam Pump Co., 14 Battery Place
New York.

Hardening Cylinders for Sand-Lime Brick

In Stock for Immediate Delivery.

FRANKLIN BOILER WORKS CO., TROY, N. Y.

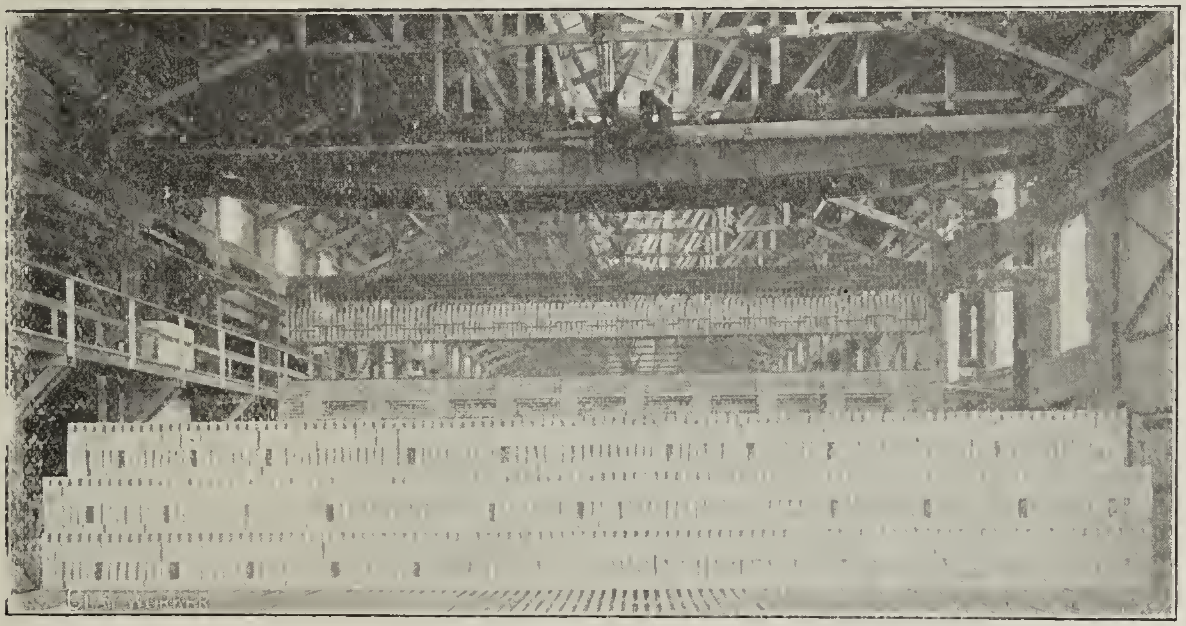
FISKE BRICKMAKING SYSTEM

J. Parker B. Fiske, Patentee,
Flatiron Bldg., New York City.

Eliminates all hand labor of wheeling, drying, tossing and kiln setting.

⁂

No cars, tracks, turntables, trucks, pallets or wooden racks.



No breakage of green bricks. No waiting for cars. No delays.

⁂

Practically no depreciation.

⁂

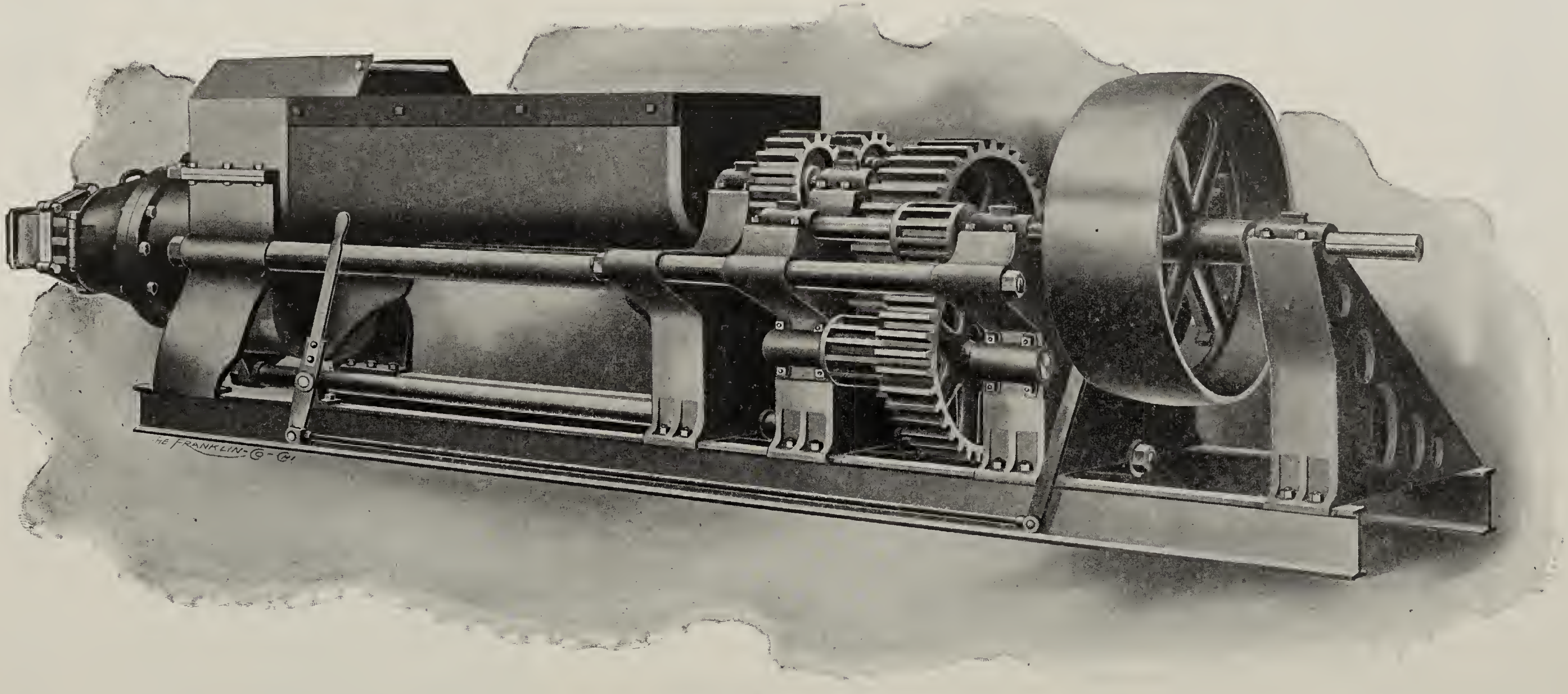
Write for particulars.

PLANT AT DOVER POINT, N. H.

Two men with crane can move 100M bricks per day from the setting-up stands at the machine to the dryer and from the dryer to the kiln, and set them for burning at a total

Labor Cost of 4c. Per M.

The Largest and Heaviest Combined Brick Machine in the World



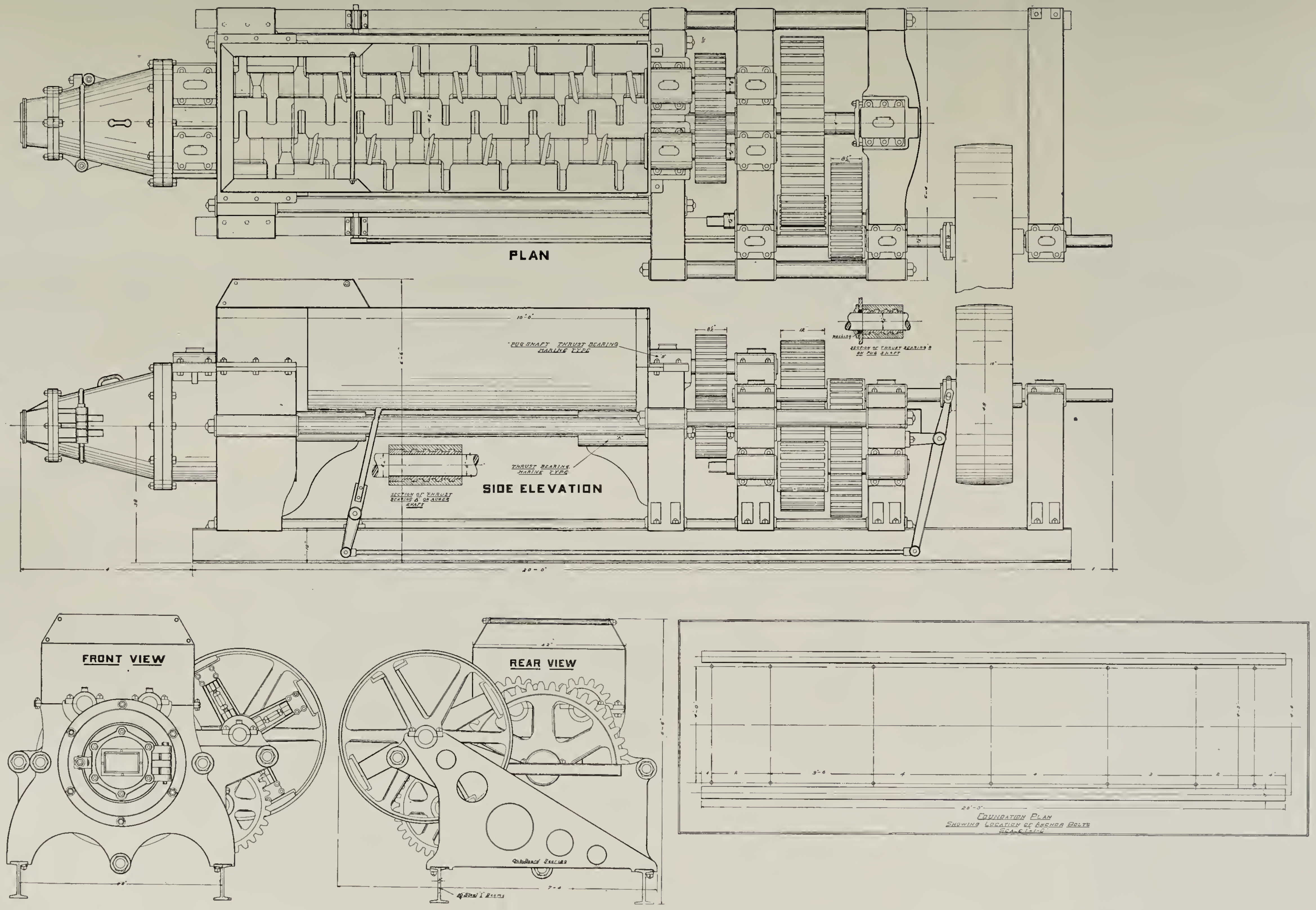
FATE'S "SPECIAL" COMBINED.

Length over all 25 ft. Height 6 ft. 6 in. Width 6 ft. 4 in. Width of pug shell 42 in. Length 10 ft. Main auger shaft 6 in. in diameter. Intermediate shaft 4½ in. Countershaft 3½ in. Main gear wheel 12 in. face. Intermediate and pug gears 8½ in. face. Pulley 48 in. in diameter and 16 in. face. Weight 30,000 lbs. Capacity 100,000 to 150,000 brick per day. Especially designed for factories desiring a very large, strong machine of great capacity.

The interior and end views are shown on opposite page, which will give you an idea of the construction.

For more particulars write

THE J. D. FATE CO., Plymouth, Richland County, Ohio.


PLAN
SIDE ELEVATION
"PUG SHAFT THRUST BEARING MARINE TYPE
SECTION OF THRUST BEARING B ON PUG SHAFT
packing
THRUST BEARING MARINE TYPE
SECTION OF THRUST BEARING A ON AUGER SHAFT
10'-0"
8½"
12
20'-0"
FRONT VIEW
REAR VIEW
Out-Board Bearing
10 Steel "I" Beams
7-4
FOUNDATION PLAN
SHOWING LOCATION OF ANCHOR BOLTS
SCALE 1"-1'-0"
20'-0"

EDITORIAL NOTES AND CLIPPINGS—Continued.

and has proved a veritable gold mine for the promoters, who amassed a fortune.

W. J. Gilmor is interested in a project to establish a plant at Louisa, Va., for the manufacture of brick. They have an abundance of very fine clay.

The Lakewood Brick Company, Cleveland, Ohio, $15,000, was incorporated by Don S. Helwick, George Palda, A. E. Davis, F. H. Elworthy and E. G. Palda.

Frank H. Hulitt and Edmund S. Kinkaid have organized a company at Louisville, Ky., for the manufacture of brick. Ground has been leased and the plant will be built at once.

The Empire Brick and Gas Company, Joplin, Mo., has been incorporated by W. B. Cline, A. C. Michaelis, John R. Bell and Frank Froscard. The capital stock of the company is $150,000.

The plant of the Hedge Tile Company at Bloomdale, Ohio, was totally destroyed by fire recently. The loss is estimated at $10,000. The plant had just been purchased by the Consolidated Brick and Tile Company.

T. J. Gilbert has organized a company of $50,000, at Ironton, Ohio, for the purpose of erecting a mammoth brick and terra cotta plant. The ground has already been staked off, and work upon its construction will be begun in the near future.

The brick plant of Wrape & Peck, Carthage, N. Y., was damaged to the extent of $1,000 by a fire which started in the kiln sheds. The company was burning the last kiln of the season, and will rebuild the burned portion at once. The firm has had a very busy season.

J. L. Johnson, J. C. Johnson, R. R. Fountain and F. H. Briggs, of Loveland, Colo., have organized a company for the manufacture of brick. They have large deposits of fine clay which has been tested with very gratifying results. Plans are now under way for the erection of a $100,000 plant.

The First Avenue Brick and Tile Company of Evansville, Ind., in common with most of the Indiana clayworkers, has had a very prosperous season. They recently closed a contract for the brick for a large school house at Evansville and also for the large addition being built to the Evansville Ice and Cold Storage Company's building.

The Kittanning Brick and Fire Clay Company, Kittanning, Pa., is building a number of houses for the employes of the company. This is a plan that might be followed by a great many of the large concerns in the clay field. The company has made a number of improvements to the plant during the past season, in order to be able handle the steadily increasing demand for Kittanning products.

The California Fireproof and Construction Company's works at Terra Cotta, near Elsinore, Cal., are being increased in capacity four or five times. The company has a contract with a San Francisco firm which alone takes fifty tons of conduit daily for a period of five years. Many extra men are being put on. E. G. Durant, of Pasadena, the president of the company, is giving the work his personal supervision.

The recently incorporated Federal Brick Company of Shawnee, Ohio, which has a capital stock of $300,000, has been organized by the election of W. O. Taylor, president; Frank Humphries, vice-president, and J. K. Henry, secretary. These officers, with Dr. J. T. Davis and George A. Davis, constitute the board of directors. The company has thirty-seven acres of land near Shawnee, upon which there is fine brick clay. Plans are now being prepared for a large brick plant to be erected on the property, and it is expected to have the plant ready for operation in the early spring.

A disastrous fire visited South Zanesville, Ohio, recently, which almost entirely consumed the plant of the South Zanesville Brick and Sewer Pipe Company. The loss is estimated at $30,000, on which there is $20,000 worth of insurance. The fire was discovered early in the morning in the dryer, and the employes tried to subdue the flames themselves, but were obliged to call the fire department. The engine room and office building alone were saved. The plant will be rebuilt at once, and the ruins had scarcely cooled before a large force of men were at work clearing away the debris. Eighteen kilns were under fire at the time and were not damaged, so that the company will be able to fill a good many of their orders. The plant was running a full force in all departments, with orders enough on the books to keep it busy for months to come.

The name of the Springfield Electric Pressed Brick Company, Springfield, Ill., has been changed to the Underwood Pressed Brick Company.

The plant of the Minerva (Ohio) Paving Brick Company has been sold to the Metropolitan Paving Brick Company, of Canton, Ohio, for $35,000.

The first car of brick from the kilns of the Benson Brick Company has been loaded and shipped to Otto Kroeger, a contractor at Bisbee, Ariz.

The brick and tile plant of John Strong & Son, located at South Rockwood, Mich., was partly destroyed by fire September 16, resulting in a loss of several thousand dollars.

The Independent Brick Company of Los Angeles, Cal., has filed a complaint against the draining of water from the incomplete outfall sewer over its property near Inglewood.

The Quaker Valley Clay Company of Rogers, Ohio, has been incorporated with a capital of $10,000, by Eugene Evans, Charles A. Reddinger, George A. McClain and Perry Dickey. Its purpose is to mine and sell clay.

The Jeffrey Manufacturing Company, Columbus, Ohio, report that their Canadian trade has assumed proportions which justify the establishment of a branch office in Canada and same has been opened at Lagauchetiere and Cote streets, Montreal, Canada.

The Clay Products Company is the name of a new concern recently incorporated with $50,000 to erect a large plant at Brazil, Ind., for the manufacture of brick, tile, conduits, sewer pipe, hollow brick, etc. H. Tilsworth, J. E. Sleever and C. F. Shannon are the directors.

Clay soil suited for the making of tile has been found in the Arroyo Seco, Cal. The Perrin Cement Roof and Tile Company wants to build a plant there and has petitioned the council for a lease of Arroyo Seco lands owned by the city. The company will purchase the property if the city will make a reasonable price.

August Giese, an employe of the Standard Brick Company, Milwaukee, Wis., fell into the pug mill and was crushed to death before the machinery could be stopped. He had wheeled a barrow full of clay to the top of the pug mill when he lost his balance and fell into the machine. He leaves a wife and several small children.

Fire broke out in the top of the boiler room of the Laurel Clay Products Company, located about three miles south of Laurel, Md., Sept. 28th, and completely destroyed the plant with the exception of the drying sheds. The estimated loss is about $10,500, with only a small amount of insurance. A large number of men will be temporarily thrown out of work.

A company has been organized at Aledo, Ill., with $25,000 capital stock, and has purchased the brick and tile plant owned and operated by B. F. Townsley for many years. Mr. Townsley will retire from the active management of the plant, although he owns a large block of the stock. A. Gillette, of Woodhull, will be the manager of the plant, which will be enlarged and improved so as to run all winter.

The Buffalo Forge Company, Buffalo, N. Y., has recently booked orders for the installation of the heating and ventilating fan systems, as follows: State Normal School, Platteville, Wis.; St. Paul Auditorium, St. Paul, Minn.; Iowa State College, Ames, Iowa; Standard Steel Car Company, Butler, Pa., for paint shop; N. Y. C. & H. R. R. R. Co., for inspection shop at North White Plains, N. Y.; one 160-inch fan 150 inches wide, heaters containing about 1¼ miles of 1-inch pipe, for inspection shop at Croton, N. Y.; 3 170-inch fans 180 inches wide, heaters containing about 3¼ miles of 1-inch pipe; Warsaw High School, Warsaw, N. Y.

The Copeland-Inglis Shale Brick Company is the name of a new concern which has just been organized at Birmingham, Ala., with $50,000 capital stock. J. R. Copeland, president of the N. B. M. A., is president; B. C. Inglis, Madison, Fla., is treasurer and general manager, and Walter Moore is secretary. They are now having tests made of the local shale and will decide on the exact location of the plant in a short time. Orders have been placed for most of the machinery and G. F. Luce, of the Luce Engineering and Construction Company, Chicago, is in Birmingham and will have charge of the erection of the plant. The factory will be up-to-date in every particular. The company will make nothing but common building brick at the start.

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol. XLVI. INDIANAPOLIS, IND., NOVEMBER, 1906. No. 5.

Written for The Clay-Worker.

BRICKMAKING IN ENGLAND.

Commendable Features of Building Brick Plants—Size of Brick, Wage Rate, Etc.

DURING A VISIT to England this past Summer, I visited many of the brickyards there, and will now try to tell the readers of The Clay-Worker the things I saw, which, I think, will interest them. First, I want to mention some of the small yards near Huddersfield, in Yorkshire, a city of over one hundred thousand population, situated some 200 miles from London. There is within a radius of twenty miles from Huddersfield a number of lesser cities, such as Leeds, Sheffield, Manchester, Bradford and Halifax, and a score of small towns. While it is not one of the largest brick centers over there, on account of so much stone being found in the locality, a large number of brick are used on account of its being so thickly populated, being in the woolen manufacturing district. There are also made here large quantities of fire and enameled brick, chimney pots and sewer pipe as well, but on account of the method in use here, I have devoted this communication to the manufacture of bricks in this particular locality.

J. Walkers & Sons' Brick Plant—Yard Office to Left, Kilns in Center and Factory to Right.

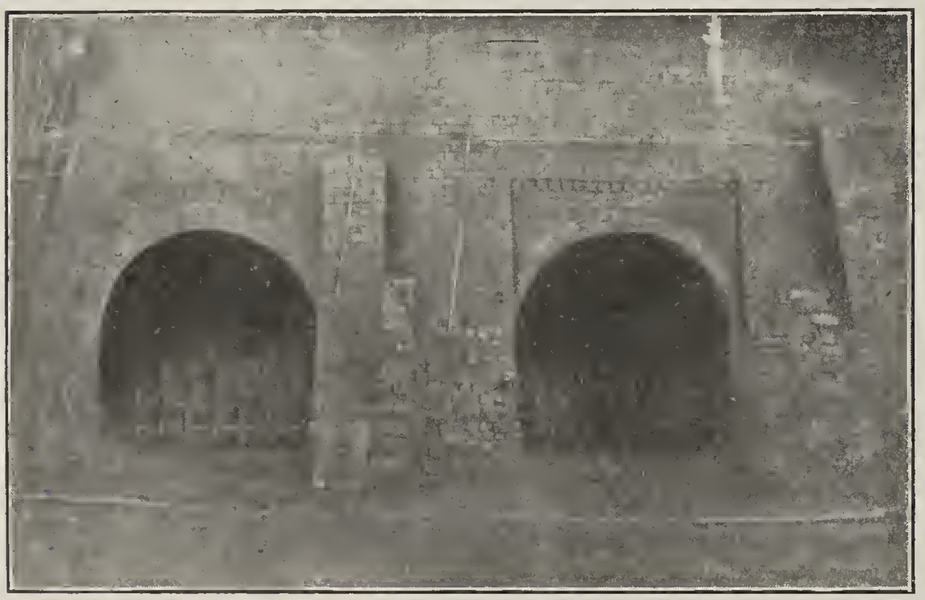
The yard now operated by the executor of the estate of John Walker & Sons may be considered as a type of the brick plants of that section. It has been operated now continuously almost for some twenty-five years or more. This yard is quite similar in general character to the ordinary common building brick plants of the United States and is, one might say, both modern and provincial. It is modern, in that it makes an excellent grade of brick, and provincial in the manner in which certain features of the work are conducted. For instance, the brick are wheeled from the machine to the kilns in ordinary wheelbarrows. The shale is now about one-half mile from the plant and got by undermining with the ordinary "pick and falling it," as the men call it. When they have dug under for quite a distance, leaving what they call props of the shale to hold it up till they dig or undermine it. Then one or two of the men watch, while others dig out the so-called props. If this is done properly they can fall material that will make from 50,000 to 100,000 their size brick. Then it is shoveled into the cars by the men and hauled to the dry pans with endless chain and cars, this particular plant not using a steam shovel, which others do, and which works well in this material. The men in the shale bank get sixpence, or twelve cents (our money) per hour, nine hours being a day's work, or fifty hours for one week, there being no work on Saturday after 12 noon, except for the burners, who get six shillings per day of twelve hours, equal to $1.50 our money. Setting is done here by the thousand, the men receiving sixpence to ninepence per 1,000, the latter being 18 cents our money. Other labor is paid: Boys, from 50 to 60 cents per day, and regular laborers loading the brick, etc., $1.00, or four shillings per day.

The capacity of this plant is 20,000 to 25,000 brick per day, and is equivalent to 25,000 to 30,000 per day of the same size brick made in the Hudson River district. They make a much larger brick than we do, the average size being 9 by 4½ by 3½ inches burnt, and they certainly do look large and unhandy to one familiar with the ordinary brick made in the States.

All of the brick made in this section of the country are made from shale, overlaying mostly a splendid quality of what I would call a yellow gray stone, the shale varying in depth from 16 to fully 60 feet, and in most cases with good natural drainage. After the stone is uncovered the same is gotten out in pieces, many weighing from six to ten tons each.

The shale is not very hard and is ground in the ordinary clay perforated pans, which are placed high enough to save bucket elevators, and so the material falls direct into the brick machine or platform, where one man watches the feeding of the machine. The perforations in the dry pan are so small that no screens are used and the material, when not sufficiently wet coming from the bank, is also wet in the pan, no pug mill in this instance being used, most of the material falling direct into the brick machine. This is a type of machine little known of in this country, though very largely used on the other side, wherever shale is being used for brickmaking. This machine is called with the maker's name first, stiff plastic brick machine, as for instance, Craven's Stiff Plastic Brick Machine, or Johnson's, and others who manufacture machines of this sort.

The operation in parts of this is similar to our own stiff mud machine, only it is very much stiffer; in fact, it is surprising how the material can be handled with this machine in the condition it is, through the pugging, molding and pressing, which are all done without any intermediate handling, by this machine, and which is necessary to be so stiff when the brick are taken direct from the machine, without any drying, and set in the kiln from 20 to 25 brick high. While I have been familiar with this machine for a long time, it never impressed me before as it did this time. I could not help but feel not only impressed with the neatness of the finish of these brick, but with the thought at the time, what a field there is in the this country for some one to apply an arrangement whereby all the brick from our large capacity stiff mud machines could be repressed without the extra labor that we have to employ to do this today, especially when one compares the neatness of a repressed brick with the majority of the brick that are made on the Hudson River and shipped to the New York market, some of which I am sure are nothing but lumps of material put together. It is surprising that they can be sold at all, especially so when we have the very material in unlimited quantities right in our own clay and shale banks.



Portion of Kilns on the J. Walker & Sons' Plant.

Digressing a little from what I have in mind to say, at present we are hauling sand from one end of the river to the other, the sand becoming more scarce every year, and some are also grinding up their brick bats to use in the manufacture instead of sand, when if they would turn their attention to the shale material that they have and use this instead of sand, for as every one knows, sand and coal mixed with the clay takes away from the quality of the clay, instead of adding to it. Take as a proof of this the brick manufactured by the Katterskill (N. Y.) Paving Brick Company, which is manufacturing about 700,000 brick per week from clay and shale, and compare them with any other brick on the Hudson River. This brick equals anything I ever saw, and when put alongside the hardest and best brick made from New York to Troy, there is simply, in my opinion, no comparison whatever.

This statement is not made with any feeling of prejudice one against the other, as I am not interested in either one, only as showing the difference in manufacture that can be gotten from materials which are available in unlimited quantities, and where the quality can be got, equal to any and at practically the some cost f. o. b. boat or rail. While perhaps the first outlay of plant would cost more than with the present method of manufacture, but when this is compared with the saving in waste and broken brick, which compared with the above is enormous, also soft or salmon brick which are sold at reduced prices, and brick spoiled by the weather, and the shortness of the season, all of which enter into the cost of manufacture, but which are not always considered when one is contemplating building a brick plant, there is no saving.

Kilns Being Filled with Green Brick.

I have digressed more than I intended, but when one sees quality being sacrificed for quantity where with a little more knowledge of what they have that would make their brick equal to anything made, it is hard to resist it at times. It is true we have no machines at present that will make a repress at one handling of the capacity machine that is used and needed here, but it is reasonable to expect ere long when we see a small insignificant little machine putting on the bevel edges on paving brick, no matter what the capacity of this machine may be, whether 25,000 or 75,000 per day, that we shall see done in our large stiff mud machines yards what is being done by the smaller capacity stiff plastic machines mentioned above, capacity of which is against them in this country. The burning is done very largely in the continuous kiln, but in the yard referred to it is done in what is called a Scotch kiln, of which their plant has seven, and of which I will give you particulars in my next. The brick are both dried and burned in the kiln.

In locating a plant in England, no attention seems to be paid to having it close by the railroad. The brick are hauled mostly in two-horse carts, taking 500 brick to a load, and are taken, in some cases, from two to four miles. I notice, however, that the more modern plants now are using what they call steam wagons, and in this way from two to five thousand brick are taken at one time, there being in this case another wagon in addition to the one attached to the steam engine. I might state here that the roads over there are simply perfect, being well drained and kept in condition all the time, which helps in hauling with a steam engine.

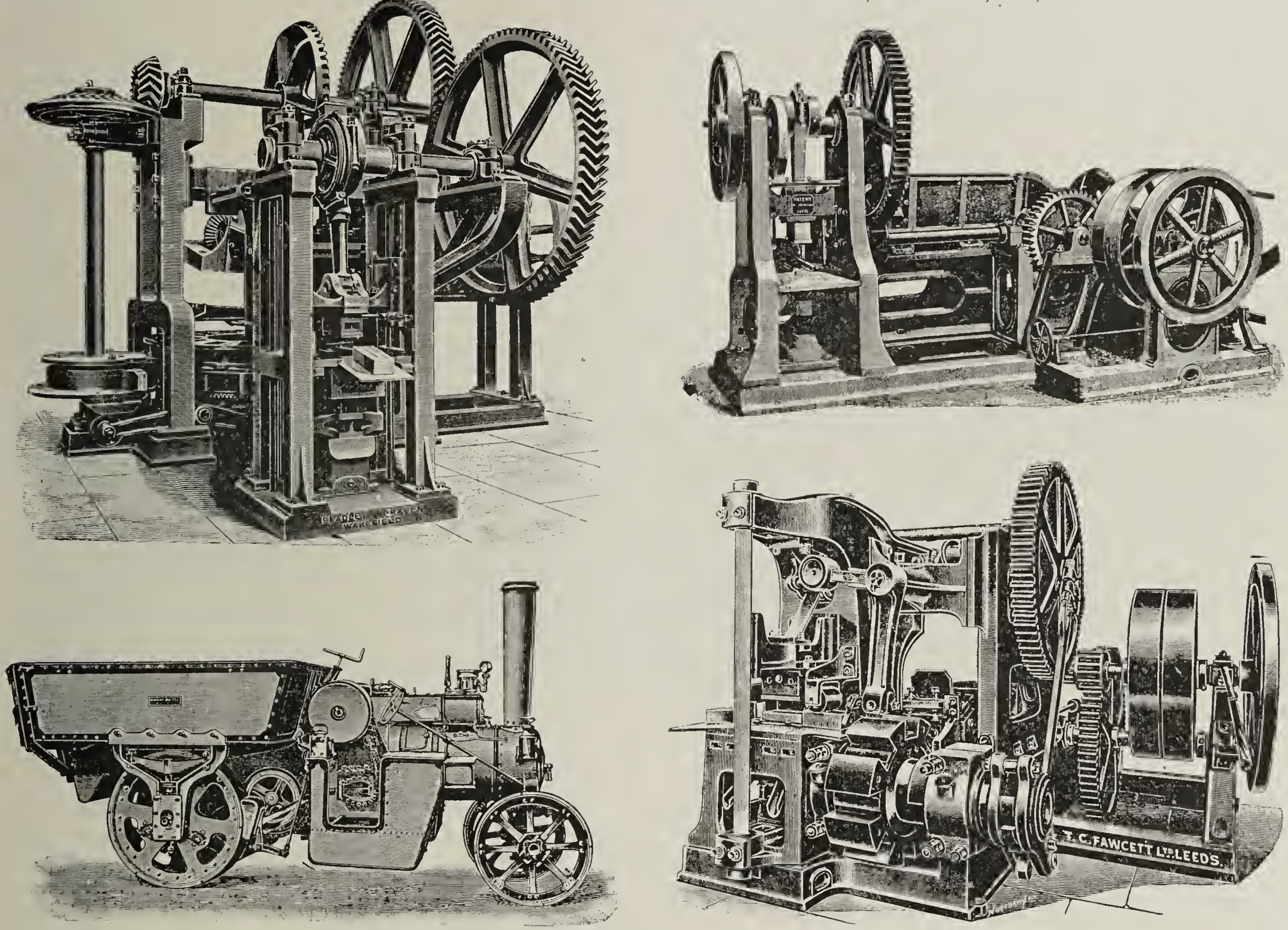
KNICKERBOCKER, JR.

Written for THE CLAY-WORKER.

NOTES FROM TIDE WATER, VIRGINIA.

THE OLD DOMINION Granite Brick Co., Cape Charles, Va., was granted a charter on Nov. 2, with H. A. Knapp, of Scranton, Pa., president; L. M. Sturgis, of Cape Charles, Va., vice-president, and V. L. Peterson, of Scranton, Pa., treasurer. Capital stock: Maximum, $200,000; minimum, $140,000; objects and purposes, to make brick, tile, hollow block and other building material.

The Norfolk Builders' Supply Co. exhausted their clay supply a year ago. For the past year they have been hauling clay over the N. & S. Ry., a distance of ten miles or more, to their plant in Norfolk. This method did not prove very satisfactory to them and they have decided to move the plant to the clay bank and ship the brick instead of clay. They are now at work moving the plant and will install new ana larger machinery and new dry kilns.



Types of the English Machines for Making Stiff Plastic Repressed Brick and the Steam Road Wagon Used in Hauling Brick to Market.

The Davis Brick Co., of Richmond, Va., with a daily capacity of seventy-five thousand soft mud brick, are changing from the soft to stiff mud process. They are installing a J. D. Fate "Premier" machine with side cut cutter, with a daily capacity of one hundred thousand side cut brick. They are in the market for a dryer.

Mr. Thomas J. Whitfield, of Suffolk, Va., is building a new brick plant on his large farm near Suffolk on the Nansemond river. The brick work on boilers and engine has been completed, and he expects to be in full running order by early spring.

The plant of D. C. Harrell & Co., at Suffolk, Va., will be sold at public auction on the yard on November 26. This plant is to be sold for a division of the stockholders. This is a small summer yard with a daily capacity of ten thousand.

Mr. H. J. Votaw, of the J. D. Fate Company, Plymouth, Ohio, viisted this section last week in the interest of his company. They have a number of machines installed through this section, and are shipping several outfits to Richmond now.

The J. L. Weller Company, Inc., of Halifax, N. C., are building several new coal burning kilns and making other extensive improvements. Dr. H. B. Furgerson, president; J. L. Weller, secretary and treasurer. They have placed an order with the Benthall Machine Company, of Suffolk, Va., for a large number of grate bars, rests and other castings for kilns, etc.

Mr. C. P. Chase, of Suffolk, Va., and well known to the brickmakers all over this country and Canada, is out with a neat little booklet telling about the "Chase System" of burning brick. Mr. Chase is a practical brickmaker of over twenty-five years experience, and says he has something in the way of a kiln that will interest all brickmakers. He spent nearly all of the past year in Canada building new brick plants. One of the large plants he equipped was the Stratford Brick, Tile and Lumber Company, Stratford, Ontario, Canada.

Mr. Geo. Bunting, of Reids Ferry, Va., talks of putting in a new brick plant the coming spring on the western branch of the Nansemond River, near Reids Ferry.

The contract has been let for another large peanut factory in Suffolk, Va. This will make six large peanut factories for Suffolk, which is now the largest peanut center in the world.

This new plant will consume a million and a half of brick, making about six million brick used in the peanut factories of this town.

The street paving in Suffolk is progressing very slowly for several reasons. They have had very bad weather to contend with. This, with a scarcity of material and labor, has been the main cause of the slow progress. The brick used are the "Maxwell" block, made at Portsmouth, Ohio, laid on five-inch concrete, two-inch sand cushion and pitch or tar filler. They have about five blocks finished and it makes a fine looking street.

This has been the most prosperous year in the brick business in Tide Water, Va., the brickmakers have ever experienced. The demand has been equal to the output, and prices have been good. This is due in a large measure to the extra building done on account of the Jamestown Exposition, the Exposition alone consuming many million brick. I notice in nearly all the Northern papers they say the exposition will be held at Jamestown, Va. This is a mistake, as the exposition will be held at Norfolk, Va., or about a ten minute trolley ride from Norfolk on the waters of Hampton Roads, nearly opposite Old Point Comfort, where the N. B. M. A. held their convention in 1901. Jamestown, Va., is sixty miles up the James river from the site of the exposition grounds.

H. L. J.

ASK FOR A SQUARE DEAL.

Ohio Fire Brick Manufacturers Appeal to the Interstate Commerce Commission for an Equalization of Railroad Rates to Eastern Points.

BRICK MEN, generally, and fire brick men in particular, will be interested in a fight which has been started by the Stowe-Fuller Company, of Cleveland, which controls the Federal Refractories Company, of Alexandria, Pa., and has two big plants in Ohio and another in Kentucky, to equalize freight rates on their product, being shipped to eastern and western points. The company has filed a regular complaint with the Interstate Commerce Commission, and a hearing will be held at Washington about the first of November to consider the matter. The roads which the company declares are discriminating against them are the Pennsylvania and the B. & O.

The specific complaint is on the matter of classification. The rate from Chicago to New York on common paving brick is 20 cents per hundred; on pressed brick it is 22½ cents; on fire clay brick it is 25 cents per hundred. This, though all bricks are made from exactly the same material and are alike in size and weight, but different in quality.

The complaint filed with the commission is in part as follows:

This clay according to the burn, hardness and smoothness, is sold either for common fire brick, pressed building brick or paving brick, and is the same brick made from the same clay.

If vitrified they are sold as "pavers"; if they have good faces as pressed building brick; if they have neither of these qualifications then as a common fire clay brick for ordinary fire purposes, such as boiler settings, fireplace settings, flues, stacks and other work of this kind.

These brick are made from the same clay and by the same machinery, but in the ordinary burning all cannot be burned as "pavers" or "builders," and are sold as common fire brick.

Paving brick are sold on a basis of from $10.00 to $12.00 per thousand, at the factory; pressed brick, at from $12.00 to $30.00 per thousand, at the kiln; common fire brick, at from $6.00 to $9.00 per thousand.

Paving brick have for some years enjoyed a commodity rate on a basis of less than 20 cents per hundred weight, from Chicago to New York.

Pressed brick were reduced to the 20 cents basis about three years ago, by a meeting of the trunk lines, but exclusive pressed brick manufacturers and paving brick manufacturers can, and do ship their seconds on a 20 cents basis east.

Our business is principally fire brick, and they insist that all of our brick should go through on the fire brick basis, which is still held up to 25 cents basis from Chicago to New York. The same point now exists on fire clay.

When shipping as fire clay it takes a 25 cents basis, but when shipped as clay a 20 cents basis.

Common fire brick and common fire clay are now the cheapest product shipped in the line of clay or brick products—fire clay selling at the plant as low as 50 cents per ton, and fire brick as low as $1.50 per ton.

The development of the manufacturing business in this country requires a large tonnage of this material, and the trunk lines insist on a basis above other commodities in this line, and we do not ask for lower rates on account of the lower value of the material, but we do ask that we be allowed to ship on the same basis as other higher priced products in the same line, and the rates today are an injustice and a discrimination on the present classification. The Central Traffic Association has acknowledged the injustice of our claim, and the local rates in Ohio have been made the same, and they have tried to arrange the matter on the same basis east and west, but at the joint traffic meeting at Buffalo with the trunk lines, they were dominated by certain trunk lines who have local rates to take care of, and although I was present and made a statement of the case, the justice of which was acknowledged by a majority, the Pennsylvania railroad interests would not hear to it and the matter had to be dropped.

They did, however, acknowledge the injustice of two clay rates, and the clay rate was put, at this meeting, all on a 20 cents basis. This 20 cents rate, however, by influence of the Pennsylvania Company, was withdrawn October 19, and put back to the 25 cents basis for fire clay, leaving the clay rate still on a 20 cents basis. As it now stands, we can ship the same clay for all purposes, except fire purposes, on a 20 cents basis; but for fire purposes we must pay 25 cents, when there is practically no difference in the clay.

We have at the National plant the largest and most improved machinery for handling clay materials in this country, with a capacity of over 400 tons per day, but we have not, nor are not now able to run same to capacity on account of the handicap on rates, which makes it impossible to go east of Pittsburg and Buffalo and west of Chicago, confining us to central traffic points, where these rates are the same.

As it now stands, the same brick made from the same clay used in paving or building can be billed east on a 20 cents basis, but if we add the word "fire" they take the 25 cents basis, and the railroads pick out certain manufacturers and claim they are exclusive manufacturers of fire brick, while others manufacture pressed and paving brick of the same clay. This classification was made years ago before the development of the present large increase of fire brick material, when fire brick brought high prices and were made only in small quantities, and it is today the classification that makes the discrimination, and we believe that where a classification makes a discrimination, it is just the same as a discrimination in rate.

We believe this matter would have been straightened out by the Central Traffic Association had it not been for the

Pennsylvania Railroad Company, who would not allow their present local rates to be disturbed.

The whole case is, that the Pennsylvania Company demands the right to dump fire brick in Ohio west of Pittsburg on a low basis, but in turn will not allow us to go east on the same basis, or on anywhere near the same basis, putting us up to the highest classification to keep us out of the eastern territory.

We are the second largest manufacturers of fire brick in the country, and have two plants in Pennsylvania, as well as two in Ohio and one in Kentucky.

We do not ask for special rates on clay material on account of the quality we ship, but do ask for a just classification and just rates, which will put all sections and all fire clay manufacturers on an equitable and just basis. We are giving you the facts of the case as they stand today, and would be pleased to present this matter to your commission in any form you desire and through our attorneys, if necessary. We have spent over a year to get this matter righted before the various traffic associations without success.

We believe that we have a just claim for discrimination, and we are today kept out of trade in the east where other manufacturers, who enjoy the "paving" and "pressed" brick rates are able to do business in that section. The only way of adjusting this matter is to make one rate on brick, regardless of whether they are used for paving, building, or any other purposes.

Birdseye View of the Plant of the Federal Refractories Co., Alexandria, Pa.

This matter has been accomplished in cement, iron ore and other articles of this kind, where the rate is made the same, regardless of analysis or use for which it is applied, and we believe that the brick business should be straightened out in the same manner."

Even if the railroads are discriminating against fire brick, it does not seem to hurt the business from booming along. Messrs. Stowe and Fuller declare that there is a big demand for their product and that numerous improvements are being made at the various plants of the firm.

The big plant at Alexandria is being increased about 25 per cent. this year. It is said to be the second largest plant for making silica, magnesia and chrome brick in America.

At the Empire, Ohio, plant, two new kilns are being added this fall and general repairs made. Four kilns are being added to the Olive Hill, Kentucky, plant. The plant at Strasburg, Ohio, however, is coming in for the most overhauling. A new addition, 150x70 feet, is being added and a new 400-horsepower engine is being installed. Six kilns are being added, and when improvements are completed there will be an addition of 21,000 square feet of floor space.

BRIGHT OUTLOOK FOR TERRA COTTA.

OTHER writers have done and are still doing ample justice to the lurid scenes of the world's greatest holocaust. We feel almost lonesome in having escaped with no further loss than our offices in the Mills Building and a few thousand dollars' worth of stock broken by the slight crumbling of the earth's surface at 5:13 o'clock a. m., April 18, 1906. Then was the commencement of the new San Francisco.

The exercises were intensely interesting and wound up with a baccalaureate sermon of flames whose eloquence held spellbound the throngs on every hilltop and devoured their every passion save that for the new city on the old site. The spirit of the days of '49 is now ancient history. The spirit of 1906 has the rostrum and will do all the talking during this century. It has appointed committees whose work will extend into the next century. "Terra Cotta" is chairman of one of the most active committees on the list, and now has to report progress—we have been awarded a forty thousand dollar contract for the architecural terra cotta which is to adorn the splendid new skyscraper for the Humboldt Savings Bank, to be at once erected on the southerly side of Market street, east of Fourth street.

Architectural terra cotta is too well established in the East to yield its own place to the onslaughts of the reinforced concrete men. I know full well that reinforced concrete has a very valuable place in structural work and will receive, at the hands of our architects, the full measure of recognition, no doubt, but owners and everybody else will find that the class A buildings will not be put up without their full share of terra cotta ornamentation. Our best buildings here stand as monuments to its worth today, and are the best possible arguments that can be placed.

We, of course, have made a mistake in California, that is not likely to be repeated, in fireproofing. It has been well known for some years that terra cotta fireproofing should be porous and not dense, but owners and architects have been loath to incur the slight additional expense necessary to producing porous terra cotta. All of these facts will now have their proper recognition among the best class of architects, and the new buildings of San Francisco, where fireproofing of this nature is required, will be up to date with the best eastern practices.—W. E. Dennison, in the Architect and Engineer of California.

Written for The Clay-Worker.

THE ECONOMICAL GENERATION AND USE OF STEAM ON BRICKYARDS.

Radiation.

THOSE WHO ARE desirous of verifying for themselves the deductions of Peclet and others in regard to heat losses from hot surfaces may do so by purchasing or constructing an apparatus termed the thermoradiometer, one design of which is illustrated in Fig. 7. This instrument as shown is an English invention, and we are not certain that any have ever been offered for sale in this country. The writer constructed one of this design for his own use several years ago from an illustration and description which appeared in a publication of the day. This instrument was a rather crude affair, but by its means many interesting and instructive experiments were made. The results, however, were not considered sufficiently original or accurate to justify their being published. We experimented merely along the beaten track with results not materially different from those in the published tests of the master experimenters.

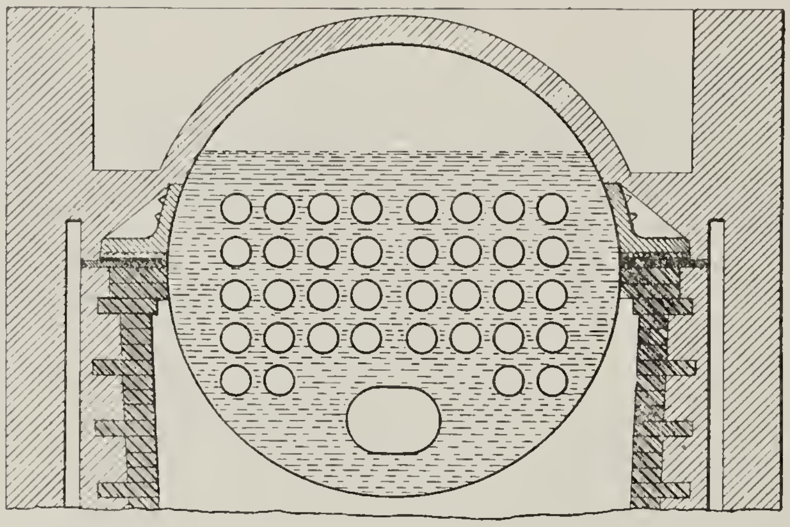


Fig 6

Referring to the figure, B is a hemispherical water container, holding generally about one-half pound of water and made of silver plated sheet copper. To prevent radiation losses from B itself, it is placed in the recess of a wooden cup C, this recess being of such shape and size that there exists a space of about one-quarter of an inch between B and C at the top, the space narrowing downward until at the bottom they nearly touch all around. C is provided with a cap, D, which is removed when the apparatus is applied to the hot surface and replaced when the test is completed. C and D are lined on their interior surface with a good heat reflecting substance; such as gold leaf, in order to reflect and conserve the radiation from B. A is a thermometer passed through the copper tube F with the mercury bulb submerged in the water contained in B. E is a short piece of rubber tube slipped over the thermometer and the end of the copper tube as shown to prevent the escape of heat through the slight space existing between the tube and the glass stem of the thermometer. G is a wooden nut, and H a cork insulator affixed as shown to bind the apparatus together.

To use the instrument, cap D is removed and the base of B placed against the surface whose radiation is desired. Then by noting the area of surface covered by B, the weight of the water in the container, its temperature at the beginning and the end of the test, and the duration of the test, the radiation losses may be calculated with a surprising degree of accuracy. The test should seldom extend beyond five or ten minutes, depending, of course, on the temperature of the radiant surface, in order to avoid raising the temperature of the water in the container to the boiling point. The formation of steam would largely impair the value of the observations. Extreme accuracy would demand that the heat absorbed by the metallic and wooden parts of the apparatus be taken into consideration, but this is a refinement scarcely necessary in average practical work.

Supplied with one of these instruments we can readily determine the relative economy of thin and thick kiln and furnace walls, pipe coverings, etc. In the best brick yard practice of today, however, kiln and furnace walls are usually of such heavy construction that, owing to the poor conductivity of brickwork, the temperature of their outer surface does not rise to an exceedingly high degree above that of the surrounding air and, in consequence, the radiation losses are vastly reduced. But wherever hot iron surfaces, such as kiln doors, steam pipes, and boiler steam space surfaces are exposed to the external air, there radiation takes place very rapidly, and the loss will amount in a short time to a considerable figure.

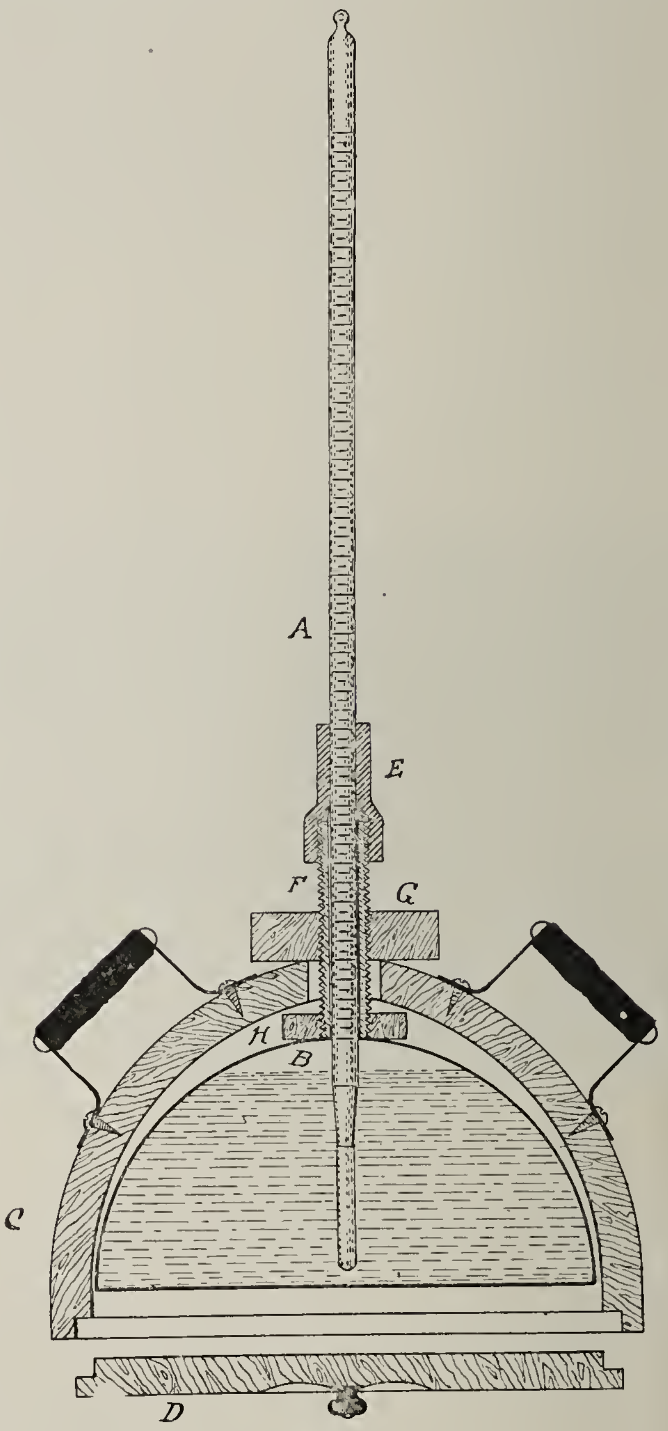


Fig. 7.

An experiment with the thermo-radiometer, which we observed at one time, demonstrated that exposed iron steam pipe surfaces, with steam at 125 pounds boiler pressure, will lose in a cool, draughty boiler room sufficient heat to cause the condensation of at least one pound of steam an hour for each square foot of bare iron surface. By covering the steam pipe in the aforesaid experiment with a good quaity of 85 per cent. magnesia pipe covering, it was ascertained that this loss could be reduced to about one-sixth of a pound an hour, thereby effecting a saving of five-sixths of a pound of steam an hour for each square foot of pipe surface covered. Since the pipe in question was 7 inches in diameter and 60 feet long, conveying steam to a large cross compound engine of the Ball type, we had, including fittings and all, about 150 square feet of bare iron surface.

The engine was operated approximately 4,000 hours per year; consequently, the steam condensation in this one pipe amounted to 600,000 pounds yearly. After putting a good magnesia steam pipe covering on this line of pipe at an expense of about seventy dollars, the annual condensation loss was reduced to 100,000 pounds of steam; thus effecting a yearly economy of 500,000 pounds of steam. Since an evaporation test of the boiler showed that eight pounds of water were converted into steam for each pound of coal consumed, it was easy to figure out that our coal consumption was reduced something like 31 tons per year. Coal was three dollars a ton so that the gain for a single year considerably exceeded the cost of the covering. These coverings are now manufactured for all sizes of pipe and fittings, and may be had at a reasonable cost considering the economy secured by their use.

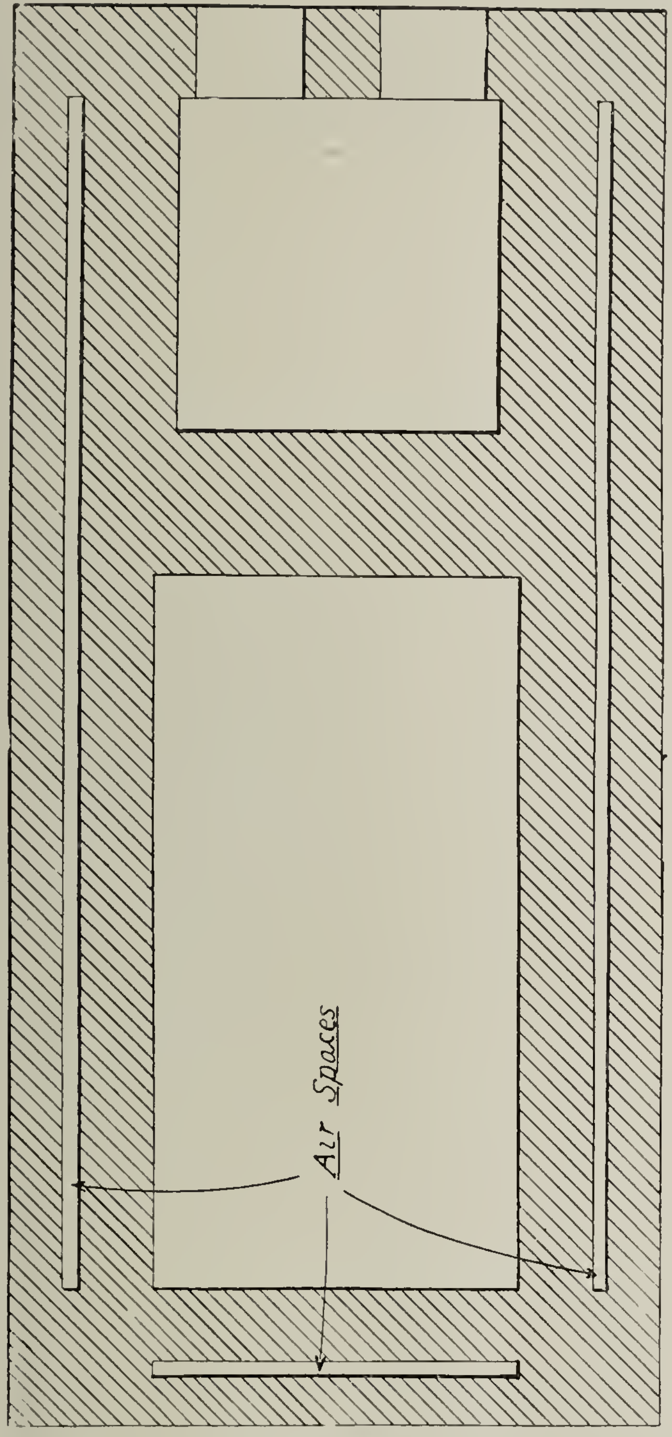


Fig. 10.

Another economical consideration that is frequently neglected is the insulation of the boiler steam space surface. The condensation occurring through the neglect of this will be nearly as great for equal areas as that in bare steam pipes. A common method, and a very good one, if kept dry, of covering this portion of the boiler is shown in Fig. 8. This consists of common brick laid edgewise in lime and cement mortar on the boiler shell, and then plastered smoothly over the top with the mortar.

A rather better method, though more expensive, is that illustrated in Fig. 9, where the covering consists of fire clay tiles having integral projections underneath as shown, which leaves an air space between the tile and the boiler shell. Since stationary dry air is really one of the poorest heat conductors of which mortals have any knowledge, this arrangement is supposed to materially increase the insulating value of the covering.

Another application of dead air spaces to the conservation of heat is shown in Fig. 10, where the modern practice of building boiler settings with air spaces running through the enclosing walls is illustrated. Besides their function of interfering with the conducting continuity of the brickwork to a large extent, they also assist in preserving the outer wall free from serious cracking by allowing a certain freedom of expansion to the inner part of the wall under the frequent and severe fluctuations of temperature to which it is subjected. The temperature variations gradually reduce in extent from within outwards so that were the full thickness of the wall bound together in one mass, as is frequently the case, the greater expansion of the hotter side of the wall would produce stresses which soon rupture the brickwork. This causes numerous cracks which extend through to the furnace and through which the cold air rushes cutting down the over-all efficiency of the boiler and wasting more or less fuel.

Since the foregoing matter on radiation losses was prepared, the writer has received a bulletin from the Iowa State College giving the report of a test on the efficiency of steam pipe coverings which had been conducted at the engineering experiment station of that college. As the results of this test are highly interesting in connection with what we have said in the preceding discussion of heat losses, besides being generally—and justly, too—considered more reliable than the unendorsed statements of the casual writer, a portion of their findings have been arranged in the following table:

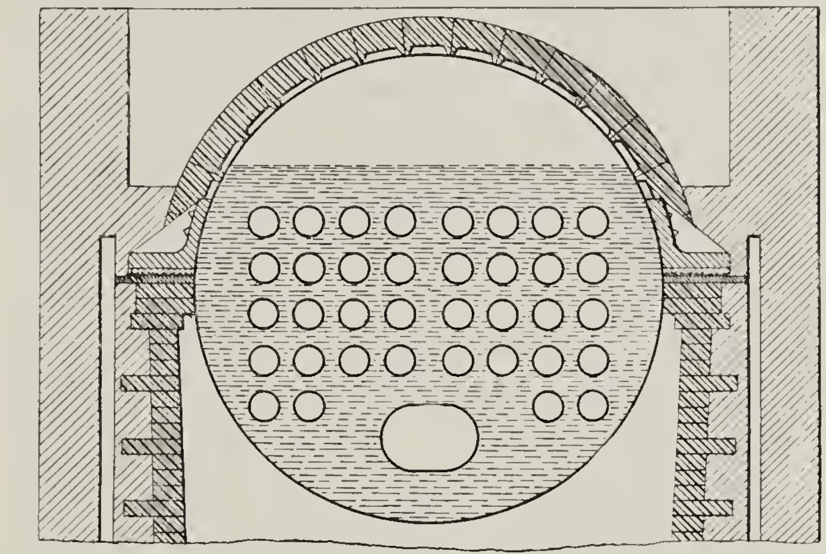


Fig. 9

TABLE—Steam Gauge Pressure = 100 lbs.

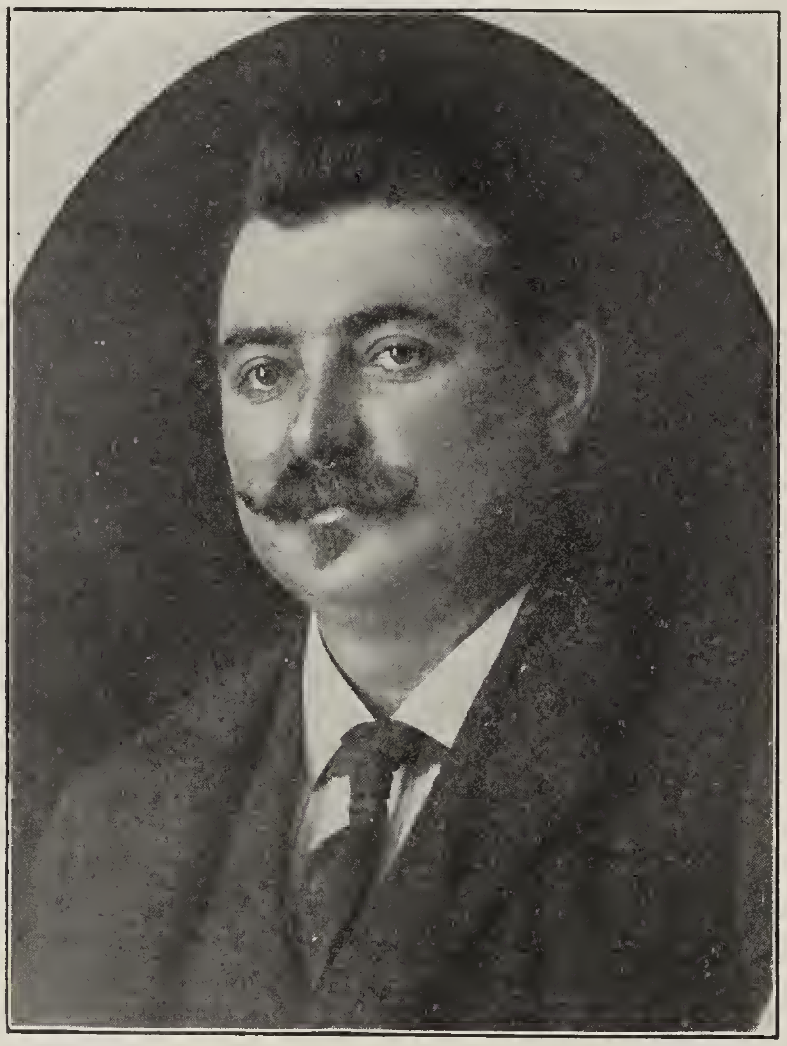
Form of Covering.	Size of Pipe, Inches.	B. T. U. transmitted per hour.		Lbs. dry steam condensed per hour per sq. ft. of pipe.	Saving due to covering per hour per sq. ft. of pipe.		Saving in per cent.
		Per sq. ft. of pipe surface.	Per sq. ft. of pipe per deg. diff. in temp.		B. T. U.	Lbs. dry steam.	
Bare ..	1	839.18	3.3993	.9455	......	......	....
Single.	1	214.367	.8537	.2448	624.82	.7136	75.2
Double	1	152.806	.5969	.1745	686.34	.7838	82.3
Bare ..	3	736.73	3.011	.8401	......	......	....
Single.	3	137.63	.5536	.1570	599.10	.6838	81.6
Double	3	93.206	.3802	.1064	643.52	.7348	87.4
Bare ..	5	669.21	2.908	.7643	......	......	....
Single.	5	101.624	.4143	.1161	567.59	.6482	85.6
Double	5	74 871	.2951	.0855	594.34	.6788	89.9
Bare ..	7	698.56	2.943	.7979	......	......	....
Single.	7	92.95	.374	.1062	605.62	.6917	87.3
Double	7	58.944	.240	.0671	640.62	.7308	91.8

THEO. RIZER.

(To be continued.)

VOGT'S SCHOOL FOR CLAY BURNERS.

AS READERS of The Clay-Worker may see by referring to an ad on page 536, Mr. Anton Vogt, of Pomona, N. C., has a school for clay burners, where the science will be taught in a practical way. Mr. Vogt is himself an expert in this work, having graduated from the school of experience years ago. The idea that "there are no two clays alike" has no terror for Mr. Vogt, for, by study and practice both, he has acquired information and skill that enables him to burn any clay from which sewer pipe or other vitrified ware may be made successfully. Mr. Vogt's school is not run as a philanthropic institution, but is purely a business proposition, and those who profit by it are expected to recompense him for time and trouble incident to the work. As his ad states, he offers his services as an expert burner to all who have kiln troubles, but he expects to be reimbursed for his service, whether it is rendered by correspondence or by personal call and inspection. That he is an expert burner in the best sense is proven by many complimentary letters of recommendation from manufacturers who have profited by his counsel. Here is a sample:



Anton Vogt, Pomona, N. C.

SCHUYLKILL VALLEY CLAY MFG. CO.,
MANUFACTURERS OF VITRIFIED GLAZED SEWER PIPE.
Shoemakersville, Pa., October 5, 1906.

To Whom It May Concern:

The bearer, Mr. Anton Vogt, has been in our employ as special burner for the past thirty days. He has taught our burner a great deal in the handling of kilns and heat generally, and we feel sure our pipe will improve by reason of his engagement. In our opinion, he thoroughly understands this branch of the business, and we can recommend him to any one having trouble along these lines.

(Signed) N. H. Kirk, Supt.

Mr. Vogt has many similar letters, copies of which will be mailed to those who desire further evidence of his ability as an expert burner, with a view of securing his services.

ADVANTAGE OF BRICK BUILDINGS OVER OTHERS.

In a recent interview a well-known Kansas City contractor gave out the following brick information:

"By employing actual figures a better comparison may be obtained. Let us assume a house to be 30x40, with basement, first-floor and second floor-heights 8 feet, 9 feet 6 inches and 9 feet, respectively. For a comparison only the finished exterior walls, including interior plastering of same, will be taken into consideration, as the interior finish will remain the same in all cases.

"First—The frame structure, with three coats of paint, will amount to $2,435.

"Second—A frame construction with pressed-brick veneering, at $20 per thousand, will cost about $248 more than the frame.

"Third—A pressed-brick veneering, at $20 per thousand, with tile backing, will cost about $263 more than the frame structure or $35 more than the frame construction with brick veneer.

"Fourth—The solid brick wall with pressed-brick facing, at $20 per thousand, will cost about $363 more than the frame structure, or $115 more than the frame construction with brick veneer, and $80 more than brick with tile backing.

"The material used for division walls or partitions should receive as careful attention as the outer walls. A frame partition lacks the quality of being fireproof, but is the one most commonly used because of its cheapness, being but 11 cents per square foot. A brick partition is not very desirable because it requires an unusually heavy wall, which cannot rest on the floor unless it is supported by a firm foundation. This must either be solid walls or intermediate supports, thereby incurring an additional expense. Such a partition, exclusive of its supports, costs 20 cents per square foot. Tile partition is the cheapest as regarding the cost of material, but as additional provisions are required for carrying its load, the cost may be considered as being the same as a frame partition. The brick partition will be excluded as being undesirable, therefore the choice will be limited to either the frame or tile partition. The fact of the tile partition possessing the quality of being deafening, fireproof and durable makes it the one which is more worthy our choice.

"Now, having established our comparisons between a frame and brick structure as to actual cost (a difference of $363 on a $4,000 house complete), it will be seen the former is slightly favored. In ten years' time the difference in cost which exists between the frame and brick structure will be entirely eliminated and the cost of both will have been the same, as the repairs, painting and insurance considered will almost amount to the difference. The repairs and painting will alone be about $40 per year after the first three years, and the insurance has a higher premium on combustible structures.

"The appearance which a brick house presents at the end of a long number of years is most gratifying, standing as erect and perfect as the day of its erection, having caused the owner at no time the trouble and expense a frame house would have made. He who foresaw all this at the beginning will appreciate and realize to what extent his broad intellect and clear insight as to the future resulted in."

THE SUBSTRATUM OF A NATION'S GREATNESS.

"Ill fares the land, to hastening ills a prey,
Where wealth accumulates, and men decay;
Princes and lords may flourish or may fade;
A breath may make them as a breath has made;
But a bold peasantry, their country's pride,
When once destroyed, can never be supplied."
Goldsmith.

"IN PERPETUUM HOMINUM MEMORIAM"

FIRST OF THE FIVE
BOOKS OF
KRUHADHARA'S
REVELATIONS

EVULGATED
IN COLLABORATION BY
E. V. JOHNSON AND
F. W. FITZPATRICK

(CONTINUED FROM OCTOBER, 1906, ISSUE.)

"Americans have effected wondrous changes in all things. But I feel sure that few of those reforms have had as much influence upon their personal morals, their mode of life, their views of life, even, as has had this very radical change in the disposal of their dead. Life itself has been made a less complex matter, tastes have become more simple, there is far less ostentation and display of wealth in dress and habitation than formerly, but far more thought is given to the civic virtues, to the improvement in every respect of municipalities, States, and the country as a whole. Personal wealth is used to an astonishing extent in the adornment, beautifying, improving of State buildings, roads, parks, waterways, anything that in any way is a public good and tends to the welfare of all. Egotism and selfishness seem to have made way to patriotism and the more generous impulses. . . . To the philosopher it would seem that much of this can be directly attributed to the new standard of life by which the Courts of Citizenship gauge men's acts.

"In every State there is one of these Courts of Citizenship and before it is placed the record of each citizen who dies. From the man's life the Court establishes his death record. It is etched upon micaloid and becomes an imperishable document, accessible to all and filed in the great mortuary monument of the State, along with the general history of that State, that is also graven upon imperishable tablets. The Court decrees—a decision from which there is no appeal—just where the body, molded into its imperishable sarcophagus of burnt clay, shall rest in the great mortuary repositories of the State, whether it shall be among those who have done signal service for that State, its honored citizens, or among the great mass of ordinary individuals—and even there there are grades and degrees of citizenship—or whether it shall be condemned to oblivion, incorporated in the foundations, the structural masses, the floors of the monuments where the names of those who have led evil lives and those derelict in their duties toward their fellow-men and the State are forever lost!

"The State Court selects a limited number of death records of citizens who, in the Courts' opinion, have done notable service for the country, men of national caliber and worthy of being placed in the magnificent terraces that surround the great monument of the Nation at Washington, or perhaps even worthy of being built into that Monument itself. These cases are passed upon by the Federal Tribunal of Honor, and if the States' claims are sustained then the bodies of those citizens shall be so honored, otherwise the States must provide a fitting place for those bodies in their own monuments.

"We visited the site of this wondrous monument at Washington. The entrance to this National City of the Dead is through a beautiful Government reservation called Rock Creek Park, just north of the Capital City. The cemetery, or as it is termed officially, the 'National Repository,' is grandly adapted to its purpose. Natural terraces rise to a magnificent plateau from which one has a superb view of splendid Washington, the Capital of which the Americans are so justly proud. The grounds are beautifully laid out. It is a masterpiece of landscape gardening, even in its present condition. Some of the terraces are approaching completion. They are really great vaults built entirely of these sarcophagi—blocks of the dead—men who have achieved national fame in their life's work. The outer faces of the walls are covered with tablets commemorative of the men who have gone on before this era. The purpose is to have the faces of these walls tell the history of the country and its great men from its discovery on through time, terrace after terrace being added as eras and epochs go into history. Inside these terraces are catacomb-like galleries and vaults, through which one may pass, having on either hand long lines of apparently solid stone, but upon each of which is an inscription, the name of some great one of the nation, the date of his birth, and that of his death and the symbol which enables one to find that man's complete history among the archives of the nation filed away in those same vaults. But those are not mere blocks of stone, in that block there lies the actual remains, the body of the man whose name is there inscribed, encased in its covering of clay, baked and turned into a granite-like mass! Does history tell us anything like this?

". . . In the center of the great plateau is a huge foundation upon which are being placed the first few blocks—those human blocks!—of the base-course of a monument, the like of which has never even been dreamed of by man. Work upon this stupendous monument is being carried on slowly, far more as a religious ceremonial than as a structural undertaking. There is no cutting of material, nor rubbish, nor mixing of mortar in evidence. The mechanical part, the apparatus, the derricks, the machinery are as permanent as can be made and in a sense ornamental, for the work is to progress at no unseemly speed. Big as the nation is, and numerous as are the men who have done and are doing great deeds, the requirements, the standards set by the Federal Tribunal are so high that it is estimated that this great memorial will still be far from completion five hundred years hence. It is to grow as does the nation, and is to be typical of that growth, and for that very reason there is no anxiety on the part of the people to complete the work with the alacrity with which all else is done in that extraordinary country. Even in its present condition there is nothing we have seen anywhere that inspires the awe, the reverence, the admiration and the exalted trend of thought as does this vast Capitol of the Dead.

". . . In the Statutory Hall of the Chambers of Congress stands a magnificent model of this monument, surrounded by its terraces and with all its adjuncts in miniature, a work of art in itself. Duplicates of this superb model are also on exhibition in most of the cities of the country, so that by its means and the wide dissemination of its illustrations, the people everywhere are thoroughly familiar with what is proposed to be accomplished. The model depicts a marvelously beautiful design. One can hardly appreciate that it is the creation of mere man.

"The monument is to stand fifteen hundred feet in height and will outrank in that respect anything that has been builded by man. The model represents it growing out of a terrace or esplanade. At the base is a great amphitheater, forming a sort of sanctuary, where orators and statesmen may deliver inspiring words to their countrymen at their country's very altar. The history of the nation is set forth all about the base and is symbolized in sculpture, groups of statuary, bas-reliefs and inscriptions. There are depicted triumphal corteges of industries, science, art and commerce. The States and Territories are represented by female figures, hand in hand, symbolizing the indissoluble chain of union. In the place of honor, externally, are inscribed the names of the thirteen original colonies, and upon the Stela, guarded by the eagle, is the Goddess of Progress, the modern Minerva, flanked by ranks of lions, typifying the glory and power of America. The statuary and sculpture, as depicted even in this small model, are glorious, and when executed in the magnificent scale of the monument itself, will indeed give one an exalted idea of the nation whose progress and citizens it is to commemorate. Then, to think that every block of that vast and beautiful structure, part of it, helping in its support, participating in its glory, is a human being, that in life so lived as to be worthy of this monument and to make that monument possible of realization!

"We next visited the great State Reservations, or 'Repositories for the Dead' in three of the important States, New York, Illinois and Minnesota. Sufficient for my purpose to describe what we saw at Chicago, the metropolis as well as the new Capital of Illinois. Twenty miles from the heart of this great city, to the West, on a slight eminence, has been laid out this park. It is in no sense a place of gloom, or at all depressing. There are beautiful drives, a wealth of flowers, grand foliage, artistic statuary and fountains. In one corner stands a partially completed Repository. It is almost pyramidial in form, some three hundred feet on the base and rising, gallery above gallery, to a central feature of obelisk form, one hundred feet high. The Repository is severe of line, yet most impressive and beautiful in appearance, and when one realizes of what it is constructed and what it typifies, there attaches to it an interest that words fail utterly to describe. Each gallery is a vault through which one passes and sees what might be thought to be memorial tablets on either hand, but, like in the great terraces at the Nation's capital, these are blocks, tombs, bodies! Externally, each gallery forms a terrace. The outer wall, like the inner, is one great surface of memorial panels. A pillar, or cornice, or ornament, or balustrade, finishing out these galleries may be of ordinary molded burnt clay, but all else, in this 'Temple of the Dead,' is actually builded of the dead in their clay encasements!

"In the central monument are the noted ones of the State. In the different galleries are placed the blocks in such positions as have been assigned them by the Court, according to its classification. There is no purchased grandeur, no lying epitaph. As men live, so are they judged and known when dead.

"This one Repository when completed will be inscribed with the date of its epoch and will contain all those who have departed this life, citizens of Illinois, their records and the history of the State during that epoch, all in imperishable, everlasting form. Beside this one another Repository will be commenced as soon as this is completed. It will be the same in size, in form, in every particular and the work is going on solemnly, slowly but surely, truly symbolic of life and its inexorable ending.

"As this next one is to be the exact replica of the first, so will be the others of the following epochs, uniform habitations of those who have helped to make the history they record. Some day, at some far remote time, this entire vast park will be covered with similar structures, no one more beautiful than the other, but each having its allotted number of citizens, occupying their assigned places in that indestructible history they have made for themselves while in life. Democratic, say you? Truly so, grandly so, wholly so, and I believe that this has been the agency above all others that has brought that powerful nation back to the true democracy outlined, aye, most carefully detailed, by the wise Fathers of that Nation in 1776.

"As it is in Illinois, so is it in every State. A similar park, similar buildings, of the same sacred material, lasting memorials to that State and its dead, a 'City of the Dead' neighboring the Capital City of the living. . . .

"The authorities having the direction of this matter have wrought out a most perfect system. The country is districted and made tributary according to the density of population and facilities for transportation to minor centers, at each of which is located a Mortuary Depot, and at these depots is carried on the work of preparation for the final entombment of the defunct citizens of that district. At the time of death the body is prepared by State officers, enshrouded and left with its mourners for a time. It is then again taken in charge by the State and transported to the mortuary depot of the district. . . . In our visit to one of these in the city of New York we were permitted to witness the solemn ceremony of the preparation of the bodies for their long rest. We had not to wait. As may be imagined, in a city where there are over 300 deaths every day, this work, to use a prosaic term, is, alas, ever in process. We were first taken to the actual working rooms, not unlike what we are accustomed to in the operating rooms of our hospitals. Dignified officials prepare the bodies, men in one chamber, women in another. The body is never unshrouded. . . . In was brought a man, in life one of the foremost barristers of the Metropolis, in death he laid beside a criminal on one hand, an innocent little child on the other. The procession following the bier was not a long one—the law says there shall be two witnesses, friends of the departed, and a State Inspector. The shrouded form was laid upon a bed of clay, then the attendants reverentially but deftly molded more clay about and over the form, beginning first with the death mask, and then covering the entire figure. More and more was added, and gently pressed into place until all semblance of form was lost, and at last there was nothing before us but a great block, a block of the dead, now a structural unit to form a part of the upbuilding of the nation's monuments. The man's name, the date of his birth and death, and the symbol by which may be found his record in the archives, are deeply graven upon the end of the block, nor weather nor time can obliterate them. . . . Other attendants carried this weighty bulk into an adjacent chamber, there to await the final act in the transformation of a human being into the permanent stone-like mass through the purifying, strengthening, not destroying, element of heat.

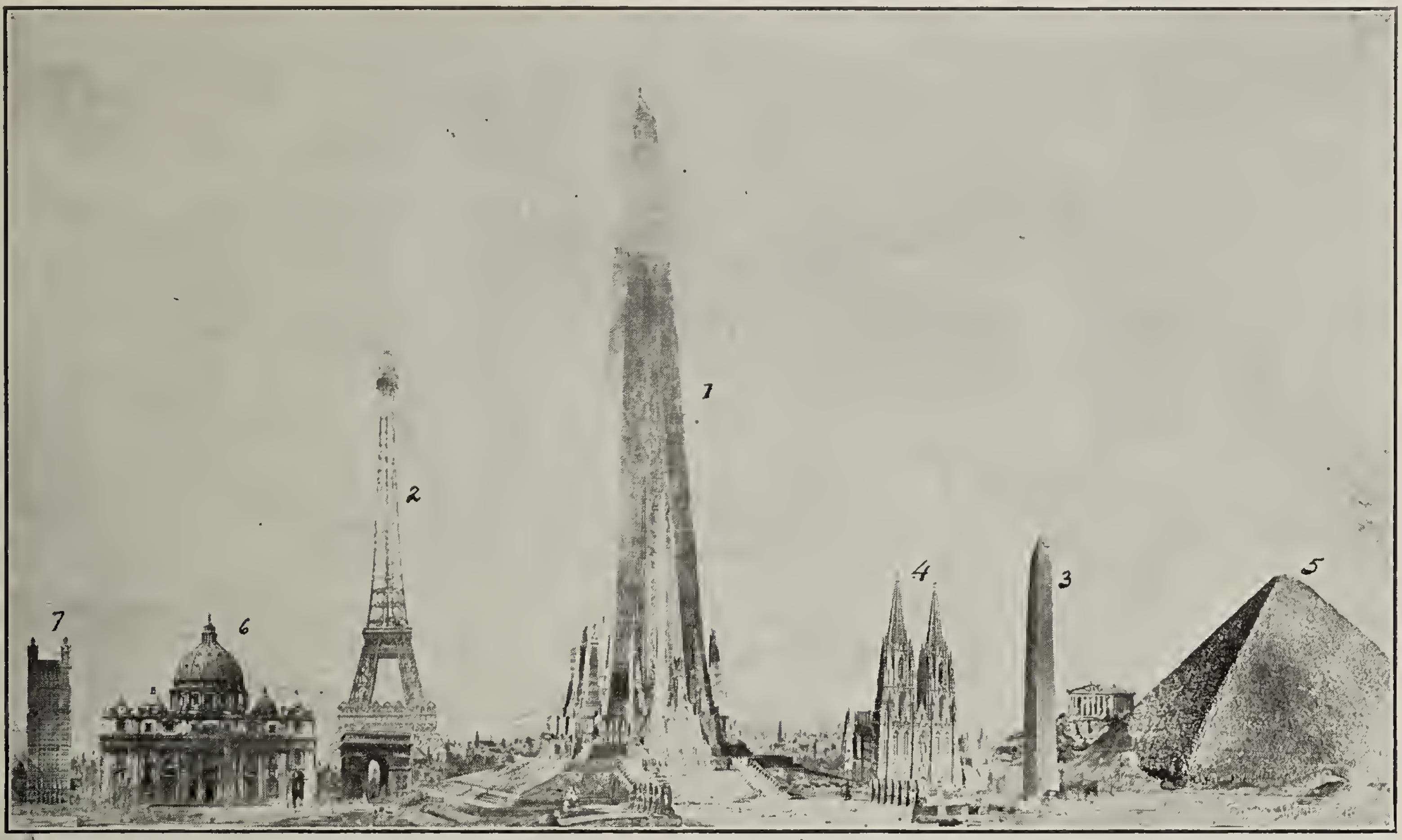
"Then was carried in the tiny form of youth's tribute to the Angel of Death. . . .

"Our guide led us to the great vault of the burning kiln. . . . An arched chamber . . . on either side are arranged twenty of the mortuary blocks, sarcophagi with their human contents. These blocks are supported on pedestals. Here and there in the vaulted ceiling, in the walls and in the floor are perforations in the tile lining. Nothing else is there to indicate the purpose of the chamber. Once outside, the huge slab doors were closed and sealed with potters' clay. An attendant turned three levers. . . We were told to look through a small aperture in the wall that was opened for our inspection. There was no fire, the chamber was exactly as before, but the blast of heat from out that tiny opening caused us to quickly close it. The baking of those blocks is not done as we are used to baking clay, in kilns exposed to the intense flames of wood, or coal or gas. It is an electric heat and reaches a degree that no fire built of human hands has ever attained. . . .

"We then proceeded to the Depot proper. A vast hall, indeed, almost a cathedral in its dimensions, simple but imposing in its decoration. Ranged all about, tier upon tier, are the completed blocks, placed side by side and one o'ertop the other, in the order of the date of the death of their tenants, spending there the probationary period of one year from death, in serried ranks and close formation, regardless of family, of race or age, and there awaiting the final decision of the real worth of the citizen to his country while in life and to be placed among the ranks of the honored, or of the ordinary folk; in the great National Monument or in the State Repository, or to be truly buried in oblivion in the invisible masses, the foundations below those giant structures!

"The last visit we made in connection with this wondrous innovation was to one of the great clay beds in Missouri. There are twelve of these in the country. Adjacent to each is a prison. Those condemned to punishment there mine this clay. The cost of the work is assessed against all the States. The product is shipped to each of the State penal institutions and the prisoners there, male and female, work it with their hands. The pug-milling, the sorting, the sieving, the refining, all those operations are performed by the prisoners and from there the perfect clay, absolutely clean, fit encasement for the other clay—the human—is sent to the State Mortuary Depots that I have but just now described to you.

". . . And thus the Americans have solved still another perplexing problem: how to give employment to prison labor. There is no competition with honest labor, yet the people are kept busy at a task that, knowing its purpose as they do, must be of itself a most powerful incentive to reform, and as reform is the principal object of imprisonment, a double purpose is served. One old convict to whom I spoke told me, with tears in his eyes, that it was the blessedest thing that had ever been done for him. Said he: 'I was condemned for life; I had murdered a man, a rival in the affections of an unworthy woman, and the enforced idleness of prison life drove me to desperation. I felt madness coming upon me. At times the depression of spirits in which I found myself made me seek means of suicide; at others such an irritability, a frenzy seized me that once I all but tore a guard to pieces for speaking harshly to me when I had not promptly obeyed an order. Then came this thrice blessed change, this work. I know what this clay is to be used for; the work started me to thinking as I had never pondered on life before. Mine is a good family, mine an honorable name. I was glad that my body in its block of clay would be buried deep in some foundation where none would ever see the inscription and associate my name with that of those I love and have disgraced. Then the labor in the open, with the bright sun shining above, instilled new life and hope within me. First it was a mere selfish desire for liberty; then a nobler aspiration to do something in atonement came to me. My conduct changed, my life was entirely different; I became what they term here an 'exemplary' prisoner. I have earned a commutation. Two months from now I will be free! and I know just what I shall do to wipe some of the stain from off my character and make reparation to the family of the man I so cruelly murdered, the State I offended, and my people whom I have disgraced. I know, too, that when, in a few years, I go to meet the Great Judge beyond, the last Court here below will assign my poor body to an humble place, but among my fellow citizens, above ground, I will be known as one who has sinned much but who has also repented and labored most zealously to atone, to some slight degree at least, for the evil he has done.' . . ."



THE GREAT MONUMENT COMPARED TO EXISTING STRUCTURES.

1, The Great Monument, 1500 feet high. 2, The Eiffel Tower, 984 feet. 3, Washington Monument, 585 feet. 4, Cologne Cathedral, 512 feet. 5, The Great Pyramid, 485 feet. 6, St. Peter's, Rome, 430 feet. 7, The Tall New York Buildings, 380 feet.

(From the New York Herald, October 21, 1925.)

. . . Japan, progressive Japan, the country that has made the most astounding strides in all paths of human endeavor that history ever had or probably will ever have to record, the nation whose Emperor so recently relinquished the scepter of empire, that his people might have a Republic in name as well as in fact, and who was compelled, despite his personal desire to retire from active life, to accept its Presidency tendered him by the vote of a grateful people, the nation that but seventy years ago emerged from the darkness of fuedal times, and that but twenty years ago sprang from unimportance, adolescence, into the very front rank of nations and has, by sheer energy and force of character, since become one of the three great world powers, one of the three sworn protectors of the world's peace, that nation has done us another signal honor. . . . It has adopted our Constitution . . . our form of Government . . . and now it has introduced our mode of the disposal of the dead, declaring it to be the most seemly, sanitary, and respectful . . . It will establish the same system of Courts of Citizenship, District Repositories, and a grand National Monument to the nation and its dead near its new capital, Hiogo. . . .

(From the London Times, February 12, 1926.)

. . . We mourn with our friends across the Atlantic, our deepest sympathy is with the nation we call kin-folk. No man, not even Washington, the "Father of His Country," nor the martyred Lincoln, did what this man has done for his people . . . as a leader and legislator, then as President for the one and only term he would consent to serve, and since then as wise guide, philosopher and friend. The name of Manning must ever stand as America's greatest and noblest President. . . . The Federal Tribunal, with the approval of Congress and of the people, and by their earnestly expressed desire, has ordered that the sacred block containing his mortal remains rest upon a pedestal under the great dome of the Capitol instead of in the State Repository, during the probationary period of a year, and until such time as the first stage of the National Monument is completed, when that block is to occupy one of the four great niches in the crypt of the Monument's central mass, the place reserved for the greatest men of the nation. One niche will enshrine the memorial to Washington, another that to Lincoln, the third the remains of the beloved Manning, and the fourth is reserved for the leader, the reformer, the guide or philosopher whom future generations will judge worthy to be among such men. . . . The great American National Monument is erected to the Nation as a record of its history, the last abiding place of the men who made it mighty, aye, and is built of them as well as to them; its dedication is comprehensive, but this central crypt may well be inscribed to the "Memory of the Greatest Among These," as the whole is fittingly memorialized "To the Perpetual Memory of All Men"—IN PERPETUUM HOMINUM MEMORIAM!

AN EXPOSITION OF PECULIAR INTEREST TO CLAY-WORKERS AND THE BRICK TRADE.

By Willard Homan.

THERE will be held next year by the waters of Hampton Roads, near Norfolk, Va., an exposition commemorating the three hundredth anniversary of the founding of the first permanent English settlement on the soil of the New World. The official name of this exposition is the Jamestown Tercentennial Exposition.

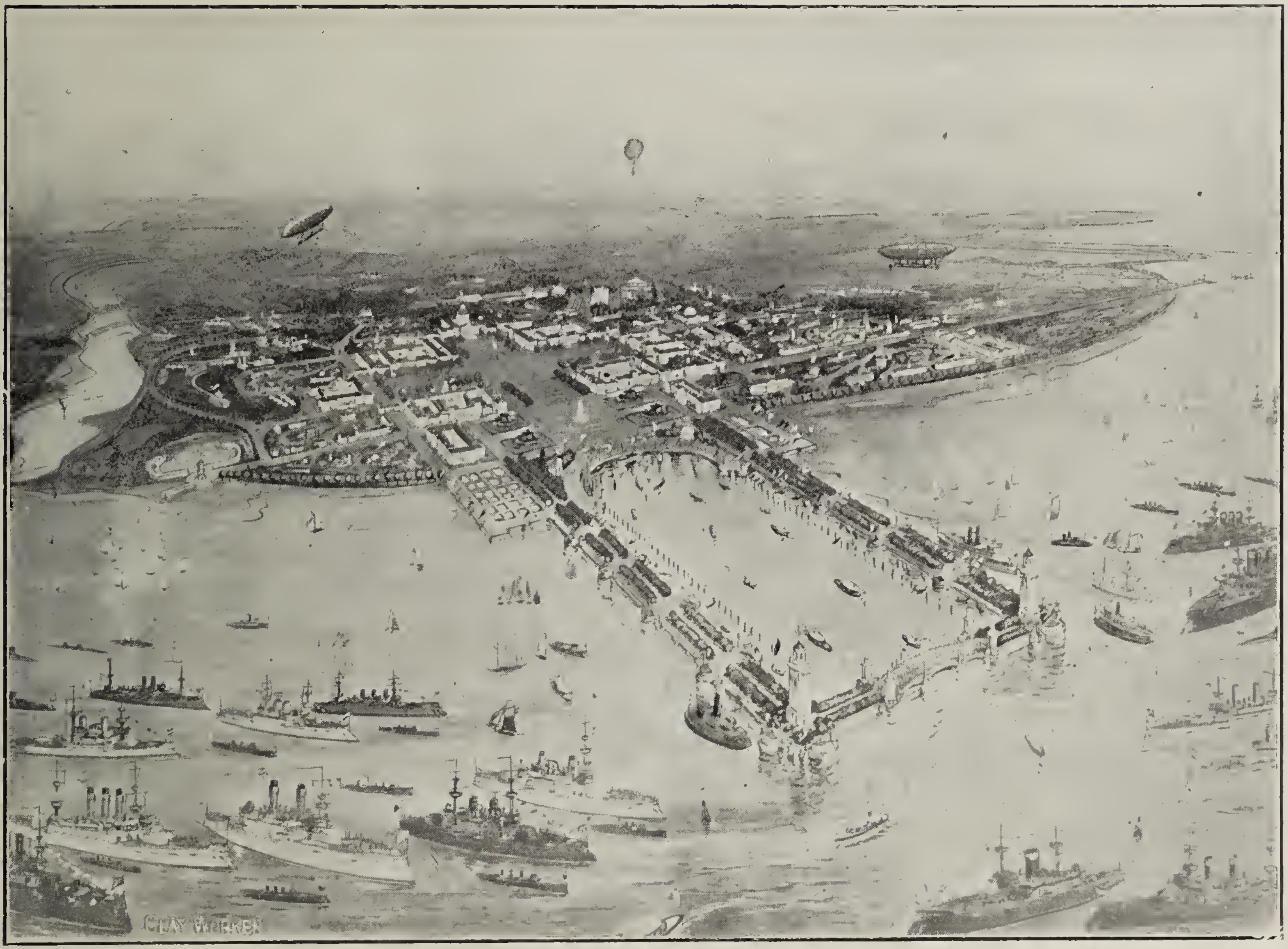
The Beginning of the Jamestown Exposition, Near Norfolk, Va.

It will be a triumph of the brickmakers', the bricklayers' and the potters' art. Staff, which has hitherto played so important a part in exposition construction, will be of but small importance in the Jamestown Exposition structures. The buildings, without exception, will conform to the stately colonial style of architecture. In this brick is the most important element. The general architectural scheme of the exposition, therefore, is worthy of recapitulation.

The central edifice dominating all other buildings of the exposition is the Auditorium and Hall of Congresses. It is square and capped with a flattened dome of the Renaissance. The salient points are decorated with plain white Corinthian columns. Flanking it on either side, and connected with it by a colonnade of brick pillars, are the buildings of History on one side, and of Art on the opposite side. These buildings constitute a group full of simple grace and dignity, standing at the head of Raleigh Square, which stretches away for a thousand yards to Hampton Roads, where begin the great piers of the exposition, 2,400 feet in length. Beyond, across Hampton Roads, is Old Point Comfort and the historic Fortress Monroe, which has played so large a part in our national history.

The States will reproduce historic colonial structures. These state buildings will line the shore of Hampton Roads for nearly two miles. Inasmuch as brick predominates in the colonial style and the buildings are being erected in a fashion to show at its best this style, the brickmaker and the bricklayer will find the buildings themselves an instructive exhibit.

In some cases an effort will be made to have the buildings made of brick conforming in style to the brick used in the early colonial structures, which were built of brick imported from England. These bricks were considerably larger than these manufactured today for domestic use.



The Jamestown Exposition as It Will Look When Completed.

The Arts and Crafts village contains workshops wherein skilled artisans of many trades will show their wares. The buildings of this group are constructed of wood instead of brick. They have low walls and wide stretching rafters reaching up to a sharp point. The eaves are wide and overhang square windows, which are nestled up right under the eaves, giving to the buildings an air of quaintness which is today refreshing to eyes accustomed to the more practical styles of today.

In the pottery shops of the Arts and Crafts village will be shown the methods used in making all kinds of pottery and ceramics.

In the larger exhibit buildings, under the heads of Manufactures and of Mines and Metallurgy, will be shown not only the methods of manufacturing building materials, such as brick and cement, but also the methods by which they are tested.

Mr. David T. Day is honorary director of the Department of Mines and Metallurgy. Joseph H. Pratt is his assistant. Dr. Joseph A. Holmes is director of power. He will conduct an exhaustive series of tests of building material. Among the building materials which will be tested are limestone, slate, granite, marble, cement, trap rock, granite blocks, pink granite, polished Kentucky bluestone and cobalt.

In these tests the best methods of testing the strength of building materials will be developed under the supervision of a man who has made a lifelong study of the subject and whose methods are the latest known to science.

There will be large exhibits of the various materials catalogued above and of the latest methods used in constructing buildings with the materials named. Aside from the purely technical features of the Exposition there is much to interest the builder or potter. There will be a great display of troops of all nations and the militia of this country. There will be held on the adjacent waters of Hampton Roads one of the greatest naval pageants ever seen in the world, and without exception, the greatest ever seen in this country.

The grounds comprise 400 acres of land, lying along the southern shore of Hampton Roads, opposite Old Point Comfort, six miles distant from Norfolk. These grounds are bounded on the land side by a beautiful floral fence. The exposition has a water front of two miles and a half. Two miles of this is a fine beach.

A Pleased Iowan.

Editor Clay-Worker:

I never have regretted my subscription to The Clay-Worker, and herewith hand you P. O. money order for $2.00, for which please renew my subscription. Chas. L. Farr.

Oskaloosa, Iowa.

LAND DRAINAGE

BY J. J. W. BILLINGSLEY

HOW TO DRAIN.

A BROAD, CORRECT VIEW of the extent of the work to be done is very essential for a right beginning, otherwise much of the work at first will likely prove a hindrance to its progress in after years, in the using of sizes of tile too small and laying drains too shallow.

The Outlet.

The work properly begins at the outlet, which should be carefully selected, so as to give the most fall and a direct flow of the water, and drain the largest area in the system of drainage mapped out in the mind of the owner or engineer or on paper.

Beginning at the outlet, the main drain should be as deep as the conditions will allow, not exceeding probably four and one-half feet ordinarily. The tile for the main drain should be large enough to carry all the water that will likely fall or run on to the area intended to be drained through the outlet. The size of the tile should depend upon, first, the extent of the area to be drained; second, upon the inclination or fall, and third, upon the depth of the drain.

First, as to the extent of area to be drained. To illustrate more fully: A proposes to drain twenty acres of land, and selects the outlet and proceeds to determine the size of the tile for the main drain. He finds that there is as much as twenty acres outside of the twenty-acre field that sheds its water on to the field intended to be drained, which is called the watershed, which must be provided for in the size of the tile for the main drain. Therefore, the tile for the main drain must be large enough to receive the water of ordinary rainfalls falling on forty acres, depending on the fall and depth of the drain, which will probably require an eight-inch tile at the outlet; possibly a larger size (ten-inch) tile if there is little fall. Beginning at the outlet, the largest size may be used until one or more lateral or side drains have entered into the main drain, and then reduce the size of the tile as the capacity required is lessened.

Second, the inclination or fall is an important factor in determining the size of the tile to be used. The greater the fall the more rapid will be the flow of the water, and the greater the amount of water that may be passed through the drain. A three-inch drain may have fall enough to carry as much or more water than a four-inch tile drain laid at a slight inclination.

A main drain may be laid deep and at a level grade and do good work, but the size of the tile should be large enough to carry the water, which will have a more sluggish flow.

Third, the depth of the drain is also a factor in determining the size of tile needed. The greater depth requires a less size when the fall is the same, the increased depth giving an increased water pressure in the soil and subsoil or earth above the drain, which increases the rapidity of the water flow. It is also true that the tile may be smaller in deep drainage than in shallow, that in the greater depth of drained soil more water will be required to bring the subsoil to a point of saturation, when the water will fall away and pass out through the drain.

A soil and subsoil drained to the depth of four feet would receive and take up the water of a heavy rainfall, passing it down through the rootlets of a growing crop, making the ground moist, but not to the point of complete saturation, almost to the drain. In this, deep drainage conserves needed moisture for growing crops, when shallow drainage would receive and pass much of the water away through the drain because of the complete saturation of the earth above the drain.

Drainage in England is usually from four to five feet in depth, and the tile are much smaller than ours, the drains in some instances being laid from twenty to thirty feet apart, the clay being much more retentive than ours, requires the drains to be nearer together. In this country the soil is much more open, requiring larger tile, and at the same time admitting the placing of the drains a greater distance apart; but in most instances deep drainage will give better satisfaction. Another factor is that the method of constructing drains should be taken into account in determining the size of drain tile to be used, for the reason that the regularity of the fall, the directness of the flow of the water, and the laying of the tile, have much to do with the efficiency of the drain.

A drain may be dug and leveled correctly, and the direction may be in a straight line, and the laying of the tile may be so imperfect as to greatly reduce the capacity of the drain, by laying them so that they are shouldered or unevenly met at the joints. When tile are thus laid, the water in its flow in the drain strikes against the shoulders, deflects or cuts across the current, lessening the rapidity of the flow, reducing the capacity of the drain at almost every joint. The unevenness of the joints is often the result of careless work in shoveling the first earth on to the tile in filling the ditch.

Connecting Lateral with Main Drains.

Lateral or side drains should be made to enter the main drain at an acute angle, so as to unite the two currents flowing in the same direction, otherwise the water flowing into the main drain from the side drain will seriously interfere with the rapidity of the flow in the main. With faulty connections the main drain should be larger than with the better connections.

Width Apart of Drains.

The width between drains, to secure the best results at a reasonable cost, depends upon the depth of the drains and the character of the soil and subsoil. Deep drains drain a much wider space on each side of the drain than shallow drains in the same soil. To illustrate: If a drain laid thirty inches deep drains a width of space on each side of twenty-five feet, a drain three and one-half feet deep will drain forty feet width of space—in either case depending upon the character of soil and subsoil. Drains laid at a depth of three and one-half feet and eighty feet apart in a close, retentive clay soil would afford very little drainage to the soil midway between, but would be satsfactory in an open soil, for the reason that water passing through an open soil to the drains meets with less resistance.

If we approximate thorough work in drainage these conditions must be taken into account to determine how wide apart the drains should be laid to secure the best results.

Digging the Ditch.

It may be thought a very simple thing, to be sure, but everybody cannot dig a good ditch, any more than everybody cannot hew to the line. Indeed it is not everyone that can set the stakes for a ditch properly. There is much in doing the work well. In digging make the top cut only wide enough to work in conveniently; carry the sides down sloping to the bottom, which should be only wide enough to receive the tile, whatever the size may be. In leveling the bottom use a scoop the size and shape of the tile, making the bed to receive the tile straight from point to point, and grade the bottom so as to give a regular flow from head to mouth, if possible.

Laying the Tile.

Begin at the outlet and lay up grade. Some may criticise this method, but we began so at the beginning of our work in laying tile, and find it best in our practice, because we are used to it, possibly. Lay the tile end to end, in a straight line; avoid shouldering or unevenness at the joints; fit the joints close together, and secure, as far as possible, a straight and regular fall for the water. After laying a few tile, settling them firmly in their bed, shovel in clay from the top of the bank and cover the tile so as to secure them in position. Then proceed to lay more, and so on.

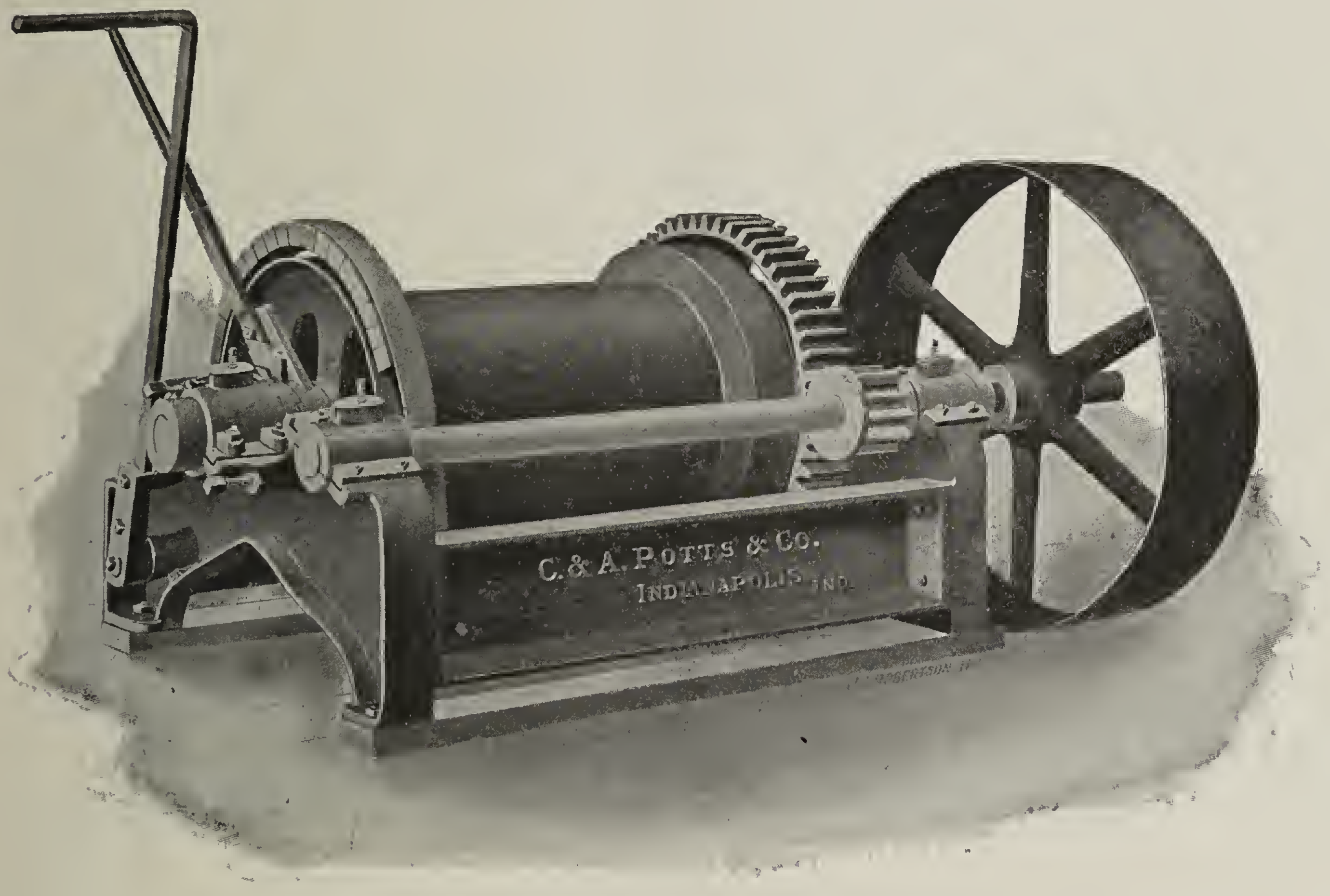
Much care should be taken to do this part of the work, so do not slight it in any respect.

After laying the tile as outlined, the filling of the ditch may be done in the most convenient way.

There is no improvement made on the farm, which, if well done, is so enduring and satisfactory every way as a well planned and well constructed system of tile drainage. It is an improvement that will last for generations to come, yielding most gratifying dividends each added year; so we can well afford to dig deep and lay the tile with care.

The Kankakee Marsh.

The recent drainage operations in the Kankakee region have resulted, this year, in one of the largest yields of corn known in the history of that section of country. Land that was two or three feet under water three years ago has yielded 100 and 125 bushels of corn to an acre. At John Brown and Sons farm, fifteen miles south of Crown Point, several thousand acres of corn are now being harvested on land that never before raised anything but German carp, frogs, and muskrat houses. This land is yielding an average of 100 bushels to an acre. Some ears are fourteen and sixteen inches in length and two and three ears to the stalk.—Indianapolis News.



C. & A. Potts & Co.'s New Winding Drums.

A Few Drainage Facts,

The stiffest clays may be dried and made mellow in the course of a few seasons by drains laid at a depth of three or four feet and the drains paralleled thirty or forty feet apart.

Drainage has removed the unsightly ponds and marshes from the farm and has converted the proverbial ague seats into a most salubrious climate.

Tile drainage has arrested the flow of surface water which every thunder-shower of summer sent, loaded with the richest portions of the soil, to the ocean never to return. It will yet improve our water supply; it will minister to the prosperity and happiness of our rural population in ways unthought of now.

Is it wise or otherwise to neglect the work of tile draining lands that we know cannot be cultivated profitably when there are wet seasons?

ADVICE TO THE INEXPERIENCED.

If parties wishing to establish a tile plant have had no experience it would be well to secure the service of some one who has had experience. Don't learn the business too quickly; there is much to be learned by those who have had years of experience. Each kind of clay will require a different management in some particular. The business of making drain tile is remunerative (where the demand will take them at fair prices) if well managed. Besides, the tile manufacturer is a public benefactor. He contributes to the general prosperity of the community in which he lives, by helping to make the business of farming a success—a certainty for generations to come.

A NEW WINDING DRUM.

We are pleased to present to our readers a New Winding Drum manufactured by C. & A. Potts & Co., Indianapolis. A number of these winding drums have been in use the past year. They have given their customers the best results. As will be seen, it is built entirely of iron, the frame being well designed for strength and durability. The drum is made entirely of cast iron, 18 inches in diameter. By making the drum large in diameter, the wire rope is not liable to be broken or damaged and will add several years to the life of it. The friction is large in diameter, formed in the flange of drum next to gear. The shoes of friction are tapering and made of well seasoned wood. The straight lever shown is attached to a worm which sets the drum against the friction. The other lever operates the brake. This is a modern and up to date machine built for heavy duty.

C. & A. Potts & Co., Indianapolis, Ind., the manufacturers, will be pleased to give any further information desired.

BROOKLYN TO HAVE STREET PAVED WITH BRICK IMPORTED FROM ENGLAND.

According to the local press, Brooklyn, N. Y., is going to have an imported brick pavement, the first of the kind in New York. The Hogan line steamer Monadnock arrived recently from England with 6,100 tons of what is known as Storrial brick. These brick are made of iron slag, are much heavier than the ordinary kind and are said to be superior to any bricks made in this country for pavement over which there is a heavy traffic. Nevins street, where the new pavement will be laid, is one of the thoroughfares in which there is a good deal of heavy trucking, and there will be a fair test of the wearing qualities.

PACIFIC COAST NEWS.

WHILE the brick situation is not yet entirely satisfactory from the point of view of the maker of soft mud brick, the building outlook, as a whole, continues good. The predictions made a month ago that the fall and winter seasons would not be allowed to interfere with building have been borne out as far as October was concerned. Taken as a whole, the building operations for the month were only a hundred thousand dollars or so short of those for the month preceding, and in the way of brick construction there was an increase of nearly one hundred thousand dollars. During October there were granted 628 permits for buildings running over $1,000 each in value. The aggregate value of these was $5,365,000. Of these permits, 118 were for brick construction authorizing work to the amount of $2,712,000 as compared with 103 permits for brick buildings to cost $2,630,000 during the month of September.

Brick men are naturally watching with interest the development of the building situation as regards the use of concrete and reinforced concrete. The indications now are that concrete will be very largely used in the building of the lower class of business structures, and certainly concrete is making quite a showing in the down town districts. There are also many reports of reinforced concrete "sky scrapers" now in the projected state. The building records, however, indicate that while there is an increasing number of concrete structures being started there is a decided falling off in the cost of them. During September, seven concrete structures were undertaken at an aggregate cost of $418,000, but during the following month, while there was an increase of three in the number of concrete buildings, there was a falling off of considerably more than fifty per cent in the aggregate cost.

The soft mud brick men of San Francisco are still doing comparatively little, and some of them are inclined to take a rather gloomy view of the situation. These argue that while there is an unprecedented demand for buildings there are other factors in the situation that are far from favorable. They refer to the scarcity and high cost of labor and of many materials, particularly lumber. From the brick manufacturer's point of view, the most serious factor is undoubtedly the presence in the city of such vast quantities of second hand brick This is something which only time can remedy, and it is undoubtedly true that the old brick will be used almost exclusively for the cheaper grade of brick houses for some time to come. The facts that the cement importers have rather overdone the thing by bringing in more cement than the demand called for and that cement is now going down in price will also have an adverse influence on the brick trade, as concrete will now be more largely used in foundation and other work than would have been the case otherwise.

The demand for pressed and facing brick is good and, while not a great deal is as yet being actually used, a good many contracts have been let and much work is being figured on.

There is an immense demand for lime, cement and sand for mortar, and the companies supplying these are rushed beyond their capacity. There is also a call for all materials going into plaster, as the replastering of the burned out sky-scrapers and the restoring of all the more or less damaged buildings, to say nothing of the thousands of temporary structures that have been hurried to completion, has created a great need for plaster and interior finish of all sorts.

The Carquinez Brick and Tile Company has about completed arrangements to open an office in this city. Large offices have been secured in the Monadnock Building, on Market street, and these will soon be opened. C. P. Grimwood, of this company, went East for the purpose of ordering the machinery for the company's plant, some time ago, and the first shipments are expected very shortly. The plant will be equipped as soon as the machinery comes in.

N. Clark & Sons, 19 Spear street, have secured what is possibly the largest brick contract let so far since the big fire. This is for the brick to be used in the reconstruction of the Merchants' Exchange Building on California street near Montgomery. The total cost of reconstructing this building will be about $700,000.

The Holmes Lime Company, manufacturers of brick and lime, are very busy in both branches of their business. The call for lime for mortar and plaster is the greatest ever known' and the company has been obliged to import lime very largely in order to keep up with the demand. In the brick end of the business, the most interesting feature is the fire brick department. This company is putting on the market the Kaolin fire brick, manufactured by the California Brick and Pottery Company, at Glen Ellen, Cal. Three new kilns of 100,000 capacity each have just been put in. The Holmes Lime Company has already met with great success with the new brick, having placed them with some of the largest of the smelting and refining companies. One notable feature of these fire brick is their lightness, as they weigh only 2½ tons per thousand.

L. Myers, representing the American Clay Machinery Company, spent last week in San Francisco very advantageously for his company.

M. O. Whelan, late of Detroit, and others, are promoting the organization of a company with a capitalization of $250,000, to be known as the United States Granite Pressed Brick Company, which, according to its prospectus, is to erect a plant at Los Angeles, Cal., with a capacity of 20,000 bricks daily. It is stated that the company will, beside plain and ornamental brick, make window sills and caps, keystones, skewbacks, belt courses, bending stones, cornice molds, copings and all other styles of work now done in terra cotta and stone. John M. Fisher is president and J. B. Dudley secretary of the company.

The Kaysville Brick Company has been incorporated at Kaysville, Utah, with a capital stock of $50,000, to engage in brick manufacturing The company owns sixty-five acres of land at Kaysville, which has been tested for its brick-making qualities, and on this it will erect a plant with a capacity of 100,000 bricks daily. Both facing brick and common brick will be turned out The officers of the company are John R. Barnes, president; John Dern, vice president; and Sidney M. Bamberger, secretary and treasurer

George W. Kelham, architect of the Palace Hotel, which will be the largest and costliest building on the Pacific Coast when it is erected, is now in San Francisco. He states that the plans call for a brick building with stone facing instead of an all stone building as was at first contemplated.

A. E. Aigeltinger, of the San Francisco office of the Hilton Brick Company, has returned from a trip to the works at Santa Rosa, Cal. The company is now adding considerable machinery at the plant.

The Monterey County Sand-Lime Brick Company is now shipping on the average 12,000 bricks daily to San Francisco. The plant is running night and day to fill orders.

John N. King, formerly of the Windsor Pottery and Terra Cotta Works, and others, have secured property in West Berkley, Cal., on which they are preparing to erect a pottery plant.

J. H. Nove and C. T. Seaferd are arranging to put in a brick machine at Orofino, Idaho, at which point they will begin the manufacture of brick.

The Central Brick Company, which has a plant at Point Richmond, Cal., is preparing to put in additional machinery sufficient to double the output of the plant.

J. Wilson is arranging to start a brick and tile plant at or near Lakeport, Cal.

W. G. McVicar, of Corona, Cal., who owns extensive clay beds near Elsinore, Cal., has again begun the shippipng of clay from these beds to Los Angeles after having had work suspended for two years.

J. M. Ireland, of the Las Vegas Pressed Brick Company, who has just returned from a trip to Chicago, reports that he has placed orders for a lot of modern brick-making machinery and that arrangements have been made to increase the shipping facilities of the plant by securing a private switch connecting with the Santa Fe railroad.

The California Clay Manufacturing Company, with works at Antioch, Cal., while its plant is not yet entirely equipped, is nevertheless turning out conduit, terra cotta pipe and hollow brick. Manager Treanor states that another building 75x150 will be erected to be used exclusively as a drying room.

The City Council of Los Angeles has at length passed the new building ordinance as it was originally drafted. The ordinance is considered favorable to the brick men, but the manufacturers of artificial stone are complaining bitterly because of a provision which forbids the use of hollow concrete blocks for building purposes in any exposed interior or exterior walls. Joseph Simons, of the Simons Brick Company, was a member of the special committee which drew up the ordinance.

SUNSET.

CLAYS OF MISSISSIPPI.

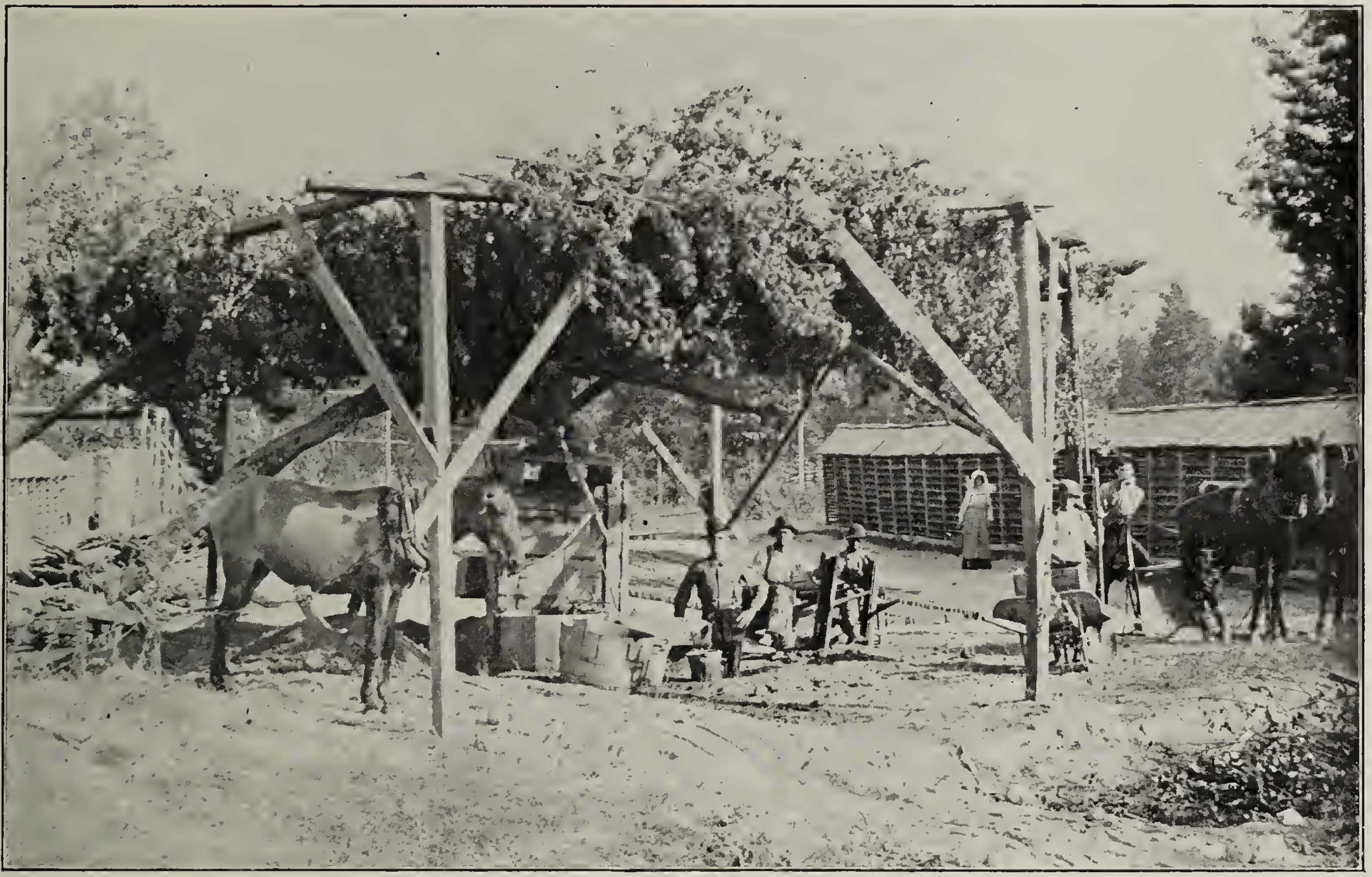
Probably there is no place on earth where there is more room for expansion in the clayworking industry than down in the sunny southland. And, they are making pretty good progress, too, but there is no reason in sight why this growth may not be accelerated in the future. Railroad building is making better shipping facilities as well as adding rapidly to the population and industrial growth, and now, to encourage development of the clay resources, the United States Geological Survey is collecting and publishing information on the subject. A new bulletin out is on the clays of Mississippi, entitled "The Geology and Mineral Resources of Mississippi," by Mr. A. F. Crider. This bulletin arranges the clays of that State under nine headings, according to the geologic groups in which they occur. These are as follows: (1) Clays of the Tuscaloosa formation (lower Cretaceous); (2) Porter's Creek clays (lower Eocene); (3) clays of the Wilcox formation (Eocene); (4) clays of the Jackson formation (upper Eocene); (5) clays of the Grand Gulf group (Miocene); (6) Lafayette clays (Quaternary); (7) loess and yellow-loam clays (Quaternary); (8) Quaternary clays of the Gulf coast; (9) Quaternary clays of the Yazoo delta.

Persons interested in Mississippi clays should make request for this bulletin (No. 283), which is published for free distribution.

OLD TIME BRICKYARD IN MISSISSIPPI.

The accompanying photo shows our brick yard eight years ago. We were then 30 miles in any direction from a railroad, though in the heart of the richest country, both in soil and timber in East Mississippi. We farmed, too. "Laid by" the first of July and put out a kiln of about one hundred thousand brick. The brick were sold for cisterns and chimneys at $7.50, a fair price, considering the price of labor, 75 cents a day and board. The cut shows the well against the mill, which furnished water; the sand box is opposite. We used fifteen molds, seven being carried away at a time in a wheelbarrow. One man stood in the pit and molded from seven to nine thousand per day. A full crew consisted of five men, molder, feeder, two off-bearers and man with scraper. Next month we will send photo of our new steam plant.

SMITH BROS.



An Old-Time Mississippi Hand Mold Brickyard.

BRICK HIGHWAY IN NEW YORK.

Work on what is believed to be the first highway in the State of New York to be improved with a brick pavement under the State aid plan, was recently begun in the town of Waterford, N. Y. The highway is about one mile in length and connects the city of Cohoes with the village of Waterford. The traffic between the two places is especially heavy, and after careful consideration it was decided that a brick pavement would best meet the traffic requirements. State Engineer Van Alstyne was consulted, and it was decided that the State would give its assistance in the construction of the brick road.

About one million and a quarter brick will be required, and the Preston Brick Company, of Hornellsville, N. Y., has received the contract for same. This company also received a contract during the present season for a brick State road at Coudersport, Pa.

GOOD ROADS.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.

IN SPITE of the fact that building operations do not seem to be as brisk as they have been through the summer, at the present time it is almost an impossibility to find a mechanic to do any small job. Bricklayers, stonemasons, carpenters and painters are all very busy, and either regularly employed by contractors on good jobs or else booked away ahead on smaller jobs. This would indicate that there is still much building, in spite of the fact that material men are now reporting a sort of let-up, and about the only way to explain it is that there must be a great deal of repair work going on which does not require much new material. Material men have become so accustomed to booking big orders this year, however, that it is barely possible that they feel building operations are dropping off because the size of the orders are much smaller, regardless of the number of orders they are receiving.

There has been nothing doing of late in the way of big buildings, none of the material contracts having been let for the National Bank of Commerce Building, which is the next to be built, and which will be fifteen stories high and cover about a quarter of a block. A good deal of interest is being manifested in this building by the brick people, as the brick contract will amount to something. The fourteen-story Long Building is nearing complpetion, and the eleven-story Scarrett Building has the steel work nearly all up, and they are laying brick on the third story, so it will not be long before the building is enclosed.

Among the good jobs of the near future will be the new Y. M. C. A. building, which is to cost in the neighborhood of $300,000.

In speaking of the slackening up in building operations one of the leading brick men of the city remarked: "I think this slackening up in building operations is a very natural thing. The people who have money to invest would rather turn it to some other channels, as the cost of building has advanced to so great an extent. There has been a big advance in most of the material that goes into a building, and there has been very heavy advances in the cost of labor, and labor is a very large part of a building. I would not be surprised to see less building until better prices can be made, as men who ordinarily invest their money that way are now hardly able to figure out an interest on their investment, as rents have not advanced with the advance in cost of buildings. There is always such a thing as a high point, and it appears to me that we have nearly reached the high point in the matter of wages, and of building material. I see nothing in the immediate future to indicate that prices will be lower, but it will take a cessation in building to bring that condition about."

According to the building permits issued in October, the month showed an increase of $44,540 over the same month of last year, the figures being $764,700 last month and $720,160 in October, 1905. There were 370 permits issued last month, of which 39 were for brick buildings, the total cost of the brick buildings being $268,000.

For the first time in the year the supply of brick became greater in the last month than the demand, and as a result there has been a cut in the price of fifty cents per thousand, the price, delivered on the job, now being seven dollars per 1,000. As the Kansas plants seem to be finding a better market in other directions, there is but little brick coming in from that direction, and the local plants are virtually in control of the business at the reduced figure. Even with all the business, however, a few of the plants are reported to be not very busy. Most of them are working full time, however, and have plenty of business booked ahead.

There has been a good deal of complaint about the shortage of cars, but brick men are not now bothered quite so badly. They have been worrying a good deal of late, however, over the prospect of a big switchmen's strike, which would close down all building operations without much delay, on account of the shortage of one kind of material or another.

There seems to be a good deal of fretting in official quarters, and in the brains of a few newspaper men, of late, about a paving brick combine. There has been several articles in the past couple of weeks indicating that there is a combine on the price of brick paving. The fact of the matter is that there is not enough of brick paving done in the entire city to pay the expense of getting up a decent combine, if everyone was anxious to go into one. There are a few little alleys around the business section, but the asphalt people get all the good paving contracts. If the city officials and newspappers were as watchful in other directions as they are in looking after a brick combine, there would be some better paving done in Kansas City today. There is a movement on foot in official circles now to hire a paving expert. A man who will live in New York, London, or some other seaport, and have an assistant here to look after the work, and he will make chemical analysis of the asphalt, etc., and send it on to Mr. Expert. who will make report to the city on which they can base their letting of contracts, and also make their payments, if the contracts are carried out according to specifications. The inspection is thought to be a mighty fine thing, judging from the rapidity with which some of the asphalt streets are wearing out, it is even suspected that the pavement is being made of sand, molasses and tar, but why the city should employ a man who lives and stays somewhere else to make chemical tests when there is already a chemist in the empoly of the city and a man could be employed to stay right at each plant and take out samples for analysis whenever he pleased, is more than the average citizen can understand. If a chemist can tell whether the asphalt is up to contract, why not let the chemist already engaged do the work?

The Pittsburg Brick Company is reporting the paving brick plant in Pittsburg even more busy than usual, if such a thing is possible, and they have been selling a great many building brick, which are coming from their Sycamore plant. Among the buildings for which they are now furnishing brick is a new central for the Kansas City Home Telephone Company, and a large Catholic church, located on 26th and Oak streets, which will use about 100,000 face brick.

The Lyle Brick Company seems to have been especially fortunate in having a fine bed of shale, for their brick has gained such a reputation among the local builders that they cannot possibly keep up with the demand, a fourth kiln has just been added to the battery, and it will not be long before the work will begin on their new plant which will be located at 48th and Baltimore, instead of 48th and Harrison, as reported in the last issue.

The Eadie Brick Company has taken the agency for the Cayuga Brick and Coal Company, of Cayuga, Ind., makers of high grade vitrified brick, in buff, mottled and speckled faces.

K. A. W.

CLEVELAND BUILDERS' EXCHANGE CHOOSE ANOTHER BRICKMAKER FOR PRESIDENT.

THE EXECUTIVE ability of the brick men in Cleveland seems to be appreciated, for the thriving Builders' Exchange there has elected another prominent Cleveland brick dealer as president. At the annual meeting, held November 8, H. C. Bradley was chosen for that position. William H. Hunt, ex-president of the national organization, also filled the position of president of the Cleveland exchange only a short time ago. Mr. Bradley is a member of the executive board of the Building Trades Employers, as well as being a partner in the firm of Barkwell & Bradley, which handles the output of the thirteen different common brick plants in Cleveland. He is also president of the Advance Lumber Company, secretary-treasurer of the Standard Brick Company, vice president of the McCart Christy Company and president of the Forest City Realty and Investment Company.

At the election, George B. McMillan, general contractor, was chosen vice-president, and F. G. Hogan was made treasurer.

H. C. Bradley, Cleveland, Ohio.

It is hardly necessary to state that E. W. Roberts, called "Teddy" for short, was unanimously re-elected secretary of the exchange.

Written for THE CLAY-WORKER.

CLEVELAND BRICK NEWS.

A REMARKABLE GROWTH in the use of hollow brick is reported in this city during the past nine months. Last year 3,000,000 hollow brick were used in buildings in Cleveland, but during the season which is just closing, upwards of 14,000,000 will have been used. The hollow brick are being made by only one local company and through persistent work on the part of the local management of the firm the hollow brick has come into most favorable notice here.

Until this year hollow brick were looked upon with suspicion by architects as well as contractors. While admitting their superior quality for lining purposes the builders were under the impression that they were not strong enough to bear the heavy weights which would be placed upon them. To overcome this impression steps were taken by the local company to have the brick scientifically tested under hydraulic pressure. An extraordinary result was revealed. One hollow brick resisted the crusher until the 58,000 pounds mark was reached. Then it was not very badly broken. Another brick with a certificate attached came out of the press in a perfect condition, though 53,000 pounds of pressure had been exerted upon it without breaking it.

The makers of the hollow brick were not slow to make this test known to the architects and builders of Cleveland. Selling at the same price as common brick it was not long before the demand for hollow brick rapidly increased. It is claimed that it makes a much warmer wall, because the air chambers in the brick absorb all moisture. The brick are made on sewer tile presses and 40,000 a day are turned out in the Newburg plant. Hollow brick are selling at $6.50 per thousand, delivered on the job.

Large quantities of these hollow bricks are being used in the new Hippodrome Building and most of the walls of the new Taylor Arcade were lined with them. They are especially adaptable to steel construction work on account of their lightness, being scarcely one-half the weight of solid building brick.

There has been an unusual demand made this season for shale brick for building purposes in and about Cleveland. Hundreds of houses are being faced with this material, the finished result being most attractive dwellings as well as most substantial buildings. Shale brick for paving purposes is almost at a premium in Cleveland and vicinity, scarcely any of the yards having stock on hands. The winter will be spent in filling orders already booked and in getting a stock on hand for next season. There is every reason to believe from present indications that the year 1907 will not fall behind in the matter of demand, the present one.

Naturally the demand for building brick of the common variety is not as keen as it was last month and earlier in the season. At the office of Barkwell & Bradley, distributers for the local companies, it was said that very little stock remains on hand and that the winter will be spent in stocking up. Most of the plants are equipped with facilities for operating them all winter and this will be done from present indications. Should the approaching winter season prove an open one they will be operated to capacity.

Stowe, Fuller & Co., makers of fire bricks, with three plants in operation and with headquarters located at Cleveland, have received no word yet as to the date of hearing for their complaint made to the Interstate Commerce Commission relative to railroad rates on fire brick being sent from Ohio to eastern markets. It is expected, however, that the commission will take the matter up during December.

Duty & Deckman, owners of a new brick plant at Carrollton, Ohio, are installing a new $3,000 dryer and other machinery in their plant there. At the plant of the Collinwood Brick and Shale Company two new kilns and a stack have just been erected, greatly facilitating the work of handling orders there. The plant of the Gwynn Brick Company, which was destroyed by fire, is about rebuilt and work will be started in a few days towards making brick once more. It is unlikely that the Brookside plant, which was also badly damaged by fire, will be ready for work this fall.

An innovation entirely new in Cleveland has recently been noticed in the matter of constructing basement walls and piers. Despite the apparent favor with which concrete is being met with there is the old distrust that it may crumble. Several enterprising contractors have hit upon a plan which they believe will solve the problem of rigid contstruction. This has been to build outer walls of one layer brick and then "pour" the concrete in between, where it hardens and is kept in place by the brick cases. This plan has been commended by many architects, but shows, however, that that old reliable building material, brick, must be used to give a feeling of confidence even amongst the most willing to venture.

The work of replacing the old county plank roads with brick is steadily going ahead. The county commissioners are at present considering the advisability of tearing up the planks on Columbus pike, York road, Mayfield road and the Independence town line road. They are the only ones left. It is likely that another season will see them paved with brick as fine as any of the other splendid county highways which deviate from Cleveland. Work on the new county roads is being rushed to completion before the season closes, and it is hoped that most of it will be finished before bad weather sets in.

City Engineer Bayne reports that the continuance of good weather until November 30 will see the completion of nearly every street paving job in the city. All the principal streets under contract have been finished and only a few odd jobs remain. The year's paving record is the largest in the history of the city, over twenty-five miles of brick pavement being laid. Contracts will be awarded during the winter for even more work next season.

BUCKEYE.

Written for THE CLAY-WORKER.

AMONG TORONTO CLAYWORKERS.

Interesting Plants that May be Visited by Those Who Attend the Canadian Clayworkers' Convention, December 12 to 14.

TORONTO, the beautiful capital of Ontario, is a city of much historical interest, and occupies the site of a settlement at first christened York, which was ravaged by an invading army and afterwards rechristened Toronto. In early times the savages roaming the Great Lakes region, were wont to rendezvous here, so it is little wonder that at a point so acceptable has been builded a great city. Located on the shore of Lake Ontario, Toronto has ready access to the States and to the great Northwest regions which pay tribute to her merchants and manufacturers. Toronto is distinctievly a brick city, due in part to an unfailing supply of good building brick and a city ordinance prohibiting the building of wooden structures within the city limits. Visitors who view her beautiful homes and substantial commercial structures, 90 per cent. of which are built of brick and terra cotta, must be impressed with the wisdom of building regulations which minimize the fire hazard, and give the city an air of permanence which is wanting in the average American city.

General View of the Don Valley Brick Company's Plant, Toronto, Ont.

The get-at-able-ness which made York the meeting place of natives in early days should now in the days of railroad and rapid transits make Toronto a popular convention city, so we congratulate the Canadian clayworkers on the choice of a meeting place this winter and predict that when the convention assembles December 12th, the attendance will be larger than at any previous meeting. There is much in and about the Canadian Capital to interest visitors, particularly clayworkers, bent on knowing what their neighbors are doing and how they do it. Visitors from the States will be more than welcome and will find in the great government buildings, splendid churches, the beautiful streets, and many places of amusement, ample opportunity for a delightful holiday.

Brick pavements are not as common as they should be owing to the small production of paving brick in Canada and the lack of persistency on the part of the people in demanding the most durable, cheapest and most sanitary pavement that can be constructed. In due time, however, paving brick will take its right place in the permanent improvement of Toronto's streets and the people will then appreciate what they have lost by the employment of a high-priced pavement which must be repaired quite frequently, while those made of good substantial brick, and laid right, will stand up under the severest tests incident to heavy traffic with little or no cost for repairs.

At the present time there is close to eighteen miles of brick pavements in the city laid with Ontario paving brick and block and the Calder block made at Cameron, Pa., U. S. A. The brick are laid on an inch and a half sand cushion covering a concrete foundation, with a cement filler and one inch expansion joint next to the curb.

During the present year up to November 3d, nearly 8,000 lineal feet of brick pavement were laid, not including track allowance work. The construction of brick pavements is steadily on the increase. In a conversation with the City Engineer, Charles H. Rust, recently, the writer was pleased to note the stand he takes for good brick pavements. He expressed a regret that a larger mileage of this material was not used, as he considers it the most satisfactory and economical roadway that can be built.

Toronto is generally conceded the leading clay manufacturing city in Canada, possessing a variety of manufactories in this line, though for the most part they are common soft mud yards. Over thirteen soft mud brick yards are to be seen in the eastern part of the city, three of these being the oldest brick plants in Toronto, if not the oldest in Ontario, having been operated nearly forty years. In the western portion of the city, there is a like number of plants, including the Ontario Paving Brick Company.

The clay fields consist mainly of from a six to twenty-five foot strip of yellow surface clay, overlaying in several points in the city a bed of blue clay. Little or no fire clay is to be found, but there is an abundance of shale along the Humber River and at Don Valley, which is utilized for the manufacture of a high-grade press brick and paving brick and block.

Port Credit, a few miles out of Toronto, possesses a rich deposit of shale, from which the Port Credit plant makes its fine press brick. A similar formation of shale is found at Mimico, where the Toronto Fire Brick Company is operating.

In an article of this kind, where we haven't the space to give much detail, it will be impossible for us to treat each of the many interesting plants at length. It is our endeavor, however, to give the readers a general conception of what the Toronto clayworkers are doing and to picture the different methods employed at the various plants by brief description of the oldest and largest brick yards. There are so many soft mud plants within the city limits of Toronto that a detailed description of each and every one would be impossible in the space at our disposal.

Of all the many clay plants in and about Toronto, the Don Valley Brick Company will undoubtedly be of most interest and receive the closest attention from the visiting clayworkers, making as it does a wide range of clay products and employing all the modern and up-to-date methods in the manufacturing of their wares.

The Don Valley Brick Company.

From the Church Street car line we wind our way down into a pleasant little valley and follow the tracks which lead up to the factory. As we approach the plant nestling in among the steep hills covered with bushes and trees dismantled of their foliage now that Jack Frost has put in his appearance, we gaze upon a large group of factory buildings, which gives us an idea as to the large amount of work being carried on.

The Don Valley Plant, Seen from a Neighboring Hill Top.

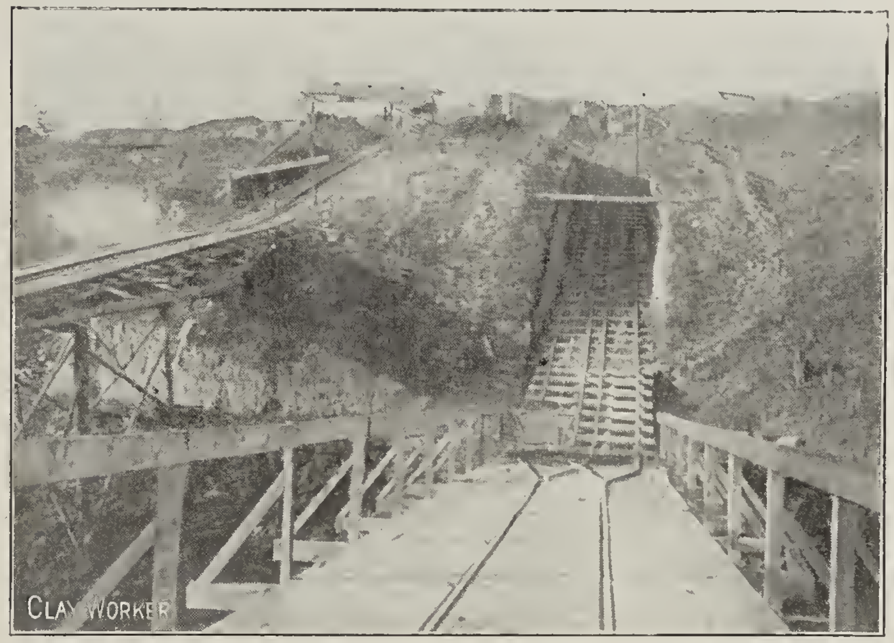
If you ask at the office for Mr. Millar, the genial superintendent, you will probably learn that he is busy in the enamelling department or at some other part of the plant. After you once locate him you are made to feel at home and are taken over the plant and shown into every nook and corner, where there is anything particularly interesting to be found.

Bird's-eye-view Don Valley Plant.

The shale pit is perhaps the best starting point, as the raw material is always the first important feature to be considered in any clay manufactory. The company owns over 115 acres of rich clay land around the plant ranging over one hundred feet in depth of excellent clay free from rocks or troublesome ingredients.

For over fifteen years the company has been taking the clay from the hill directly to the rear of the plant, going down to a great depth, leaving a huge basin or pit, the bottom of which is nearly a hundred feet below the level of the plant. When the company first began to mine the clay, they used a shaft and worked everything out leaving this enormous hole.

A glance at the imposing wall of clay on the farther side of the pit reveals to us the fact that they have a great quantity of rich clay that seems inexhaustible. On the top is a loamy soil with boulders scattered through it. Just below this is a forty-foot vein of a fine light buff clay as rich and free from impurities as any washed clay. This clay at the present time, is being blasted or dynamited and taken by gravity to the top of the works on a track running down to the plant. The cars are brought back by means of a drum and cable arrangement similar to those used in coal mines. In the near future, a Marion steam shovel which is now being used at a lower level will be shifted to this level and a larger steam shovel will be installed in the place of the old one. Below this forty-foot stratum of fine light buff clay there is an eighty-foot vein of hard blue clay used in the manufacture of their wire cut brick. The new seventy-ton steam shovel will be used in mining this clay. There is a fifteen-foot stratum of sand interlaid with the clay which will be used in connection with the blue clay. Below all this raw material is a seventy-five-foot bed of shale, which is being blasted by means of a steam drill and carried in cars up an incline to the plant from the pit.



Method of Getting Clay to Plant by Gravity.

Turning from the clay pit, our attention is drawn to a mammoth continuous kiln, which is probably the largest one to be found in Canada. If any of The Clay-Worker readers know of another continuous kiln of this size we would like to know its whereabouts. It is 226 feet long and 150 feet wide, containing twenty-six chambers, each having a capacity of 50,000 brick. This continuous kiln has an immense stack built in the center 125 feet high and 13 feet square. They burn all of their wire cut brick in this kiln. A smaller continuous kiln, 150 by 60 feet, having fourteen chambers of 25,000 capacity each, is employed for the burning of their drain tile, floor tile, partition tile and block and general fire-proofing ware.

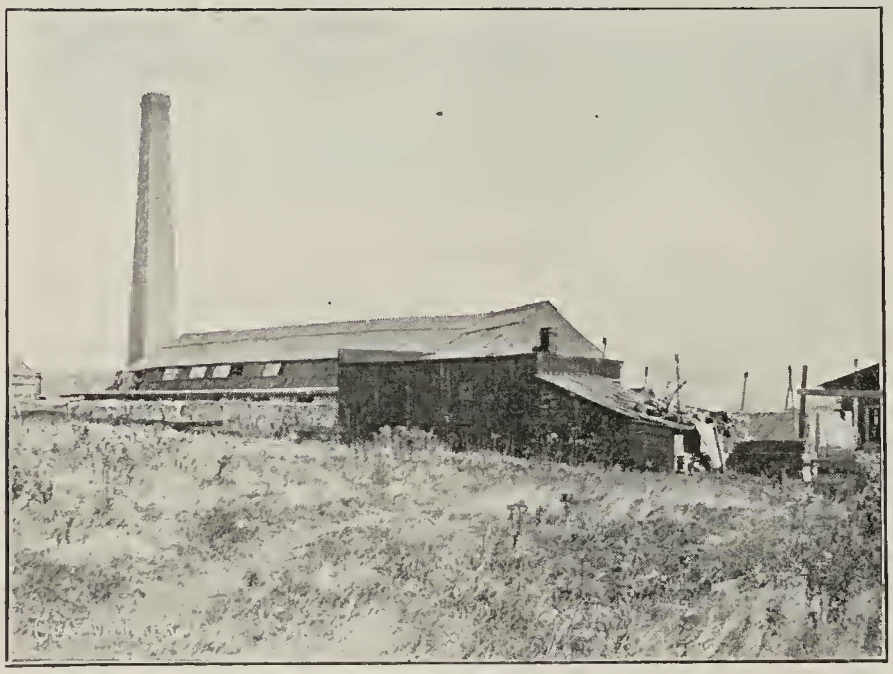
This large plant has four separate and distinct departments, each manufacturing an entirely different ware. The department known as No. 1 makes the grey stock brick and No. 2 all of the common building brick, while the other two departments manufacture fireproofing, drain tile and dry press brick, including ornamental shapes.

The No. 1 factory uses the upper clay brought down from the clay bank to a chute high above the press. The clay is dumped into the chute and drops into conical rolls of the Drake pattern. From the rolls it goes to the machine, which is a combined pug mill and brick press.

The brick are loaded into cars and run into a dryer in which the waste heat and steam is utilized. This drier has eighteen tracks and is three stories high. The first floor is used entirely for brick, while the second and third are used for fire-proofing and drain tile. On the second and third floors, the ware to be dried is racked on pallets, the same system being used as in the common sewer pipe drying system. One hundred and forty of the cars used are made in Iowa, while the same number were furnished by a Toronto firm. This yard turns out 40,000 brick daily.

Clay Bank at Joseph Russell's Yard.

Common brick are made on the No. 2 yard, using the blue clay at the second level. A Chambers brick machine and a Doig soft mud machine make the brick, which are put on cars and sent into another dryer. This one is known as the Sheldon dryer, having eight tracks with 130 cars. This yard has a daily output of 70,000 brick.



Continuous Kiln at the Russell Plant.

The fire-proofing is made to the rear of the engine room at this department. An American Clay Machinery Company's No. 23 machine is employed. The green ware is loaded into cars and raised on a power elevator to the second and third floors over the common brick dryer. In this dryer waste heat is used entirely, being forced in by means of a Detroit blower fan of 120-inch diameter. The other dryer uses a Sturtevant fan, of 20-inch diameter. A third dryer employs the Sheldon fan, it also being a 120-inch fan. These dryers have a total capacity of 150,000 brick.

In the manufacture of the fireproofing the clay is dropped into a chute from above, which carries it into a granulator. Sawdust is elevated from below and mixed with the clay in the granulator. It then goes through conical rolls and thence to the machine.

Shale is also used in this department, the Chambers Bros.' outfit being used to work this material as well as the clay for wire cut brick. It is brought up and dumped into an American Road Machine Company's crusher and elevated to storage hoppers, from which the crushed material is drawn off by means of gravity into two Frost and one Johnson dry pans. Each of these dry pans have individual screens, one Dunlap and two gravity screens. There are three ordinary hoppers below the screens for the standard presses and another hopper for the ornamental press.

The clay for the wire cut brick is taken from the pit by steam shovel and the cars drawn by horses to a chute over the disintegrator. From the disintegrator the clay is passed through a roll crusher and then dropped into a Wallace pug mill, from which it is taken to the Chambers Bros. outfit.

In the dry press plant there are three dry pans and four four-mold presses, three of them Simpson, the other one a Boyd. One press makes ornamental ware entirely, making 30,000 daily. To the rear of these four presses are two screw presses of single mold pattern. The power plant at this factory consists of four boilers, two of 100 horsepower and two of 200 horsepower each and a 175 horsepower Wheelock compound engine.

Fuel Supply at the Russell Plant.

In this part of the plant there are eight down draft kilns, five of which are used for press brick, while the rest of them are used for stock brick. Besides these kilns there are five muffle kilns for burning enameled ware. A new one is now in the course of construction. They make an excellent line of enameled brick, producing all colors and shapes. Their yellow enamels are beautiful and cannot be excelled anywhere on the continent. The white enamel brick are the most common, over 10,000 of these being made each week, totaling 600,000 for the year. For the enameled ware the buff stock brick are used almost entirely, these making an excellent body.

This firm has been turning out enameled ware for five years, the last two seasons being the most profitable, as before that time it was mostly an experiment. Mr. R. Davis, the present owner, has been at the head of this plant for five years, buying out the former owners, Taylor Bros., in 1901. The Taylor Bros. discovered the shale bed at this locality in the eighties and had tests made. After being thoroughly satisfied that the clay had the desired qualities they erected their plant and operated it for twelve years, the last seven years of which they gave much attention to the enameling of brick. The plant was slowly increased until today it is without doubt one of the finest to be found in America. They employ from one hundred and fifty to two hundred men, use sixteen teams, besides horses and mules on the yard, and have their own stables. They have erected a large machine shop, with a carpenter shop on the second floor and do all their own repairing.

One noticeable feature is their fire department. This consists of a hose reel and a 500-gallon pump. Sections of hose are to be found at different parts of the yard and everything is kept in readiness at all times, so that in case of fire, it can be put out immediately before any damage is done.

The one strange thing about the selling end of this plant is the fact that the Toronto people will pay more for their clinker brick than they will for the finer brick. It is a fad in Toronto that demands all the odds and ends to make a strange variety in the building brick.

The burning of the stock brick in the down draft kilns is accomplished in six days, while the press brick require about ten days. The fire-proofing takes but twenty-four hours in the continuous kiln after the fire comes to it. They can burn in the continuous kiln for one-fourth the cost in the down draft kilns, which is indeed a remarkable saving, and something every one should investigate.

John Price's Clay Field.

Turning from the Don Valley Brick Company's plant and Superintendent Millar's warm hospitality, we went back to the city and boarded a King street car for the

Joseph Russell Brick Yards.

The main yard is located in the eastern part of the city, near Greenwood avenue, in a group of thirteen or more soft mud yards. The second yard is known as the Jones Ave. factory, located several squares to the northwest of the main yard. All of the plants in this neighborhood employ nearly the same methods, using the same kind of clay and machinery. The Russell plant is one of the three oldest in Toronto, the father of Joseph Russell, the present owner, having established and operated the plant nearly thirty years before the son took up the business in 1896.

At this plant they have thirty acres of surface clay running to a depth of twenty feet, with from eight to ten inches of stripping. The clay is blasted and taken to the presses on dump cars and carts. A Doig pug mill and a Martin brick machine, making from twenty-five to thirty thousand per day, are used on one of the two outside yards, which are only operated during the summer months. The power to run the first outside yard is furnished by a 30 horsepower engine and a 60 horsepower boiler, while the other employs a 20 horsepower engine. The same kind of machine and pug mill are installed here, making twenty-five thousand brick daily. All of these are dried out in the open, being placed in the rack yard, which has a capacity of 380,000. The yard known as the Inside yard consists of a 60 horsepower boiler, a 30 horsepower engine, an American combined pug mill and brick machine, making 20,000 daily, a Baird & Son sander and a dryer utilizing exhaust and live steam.

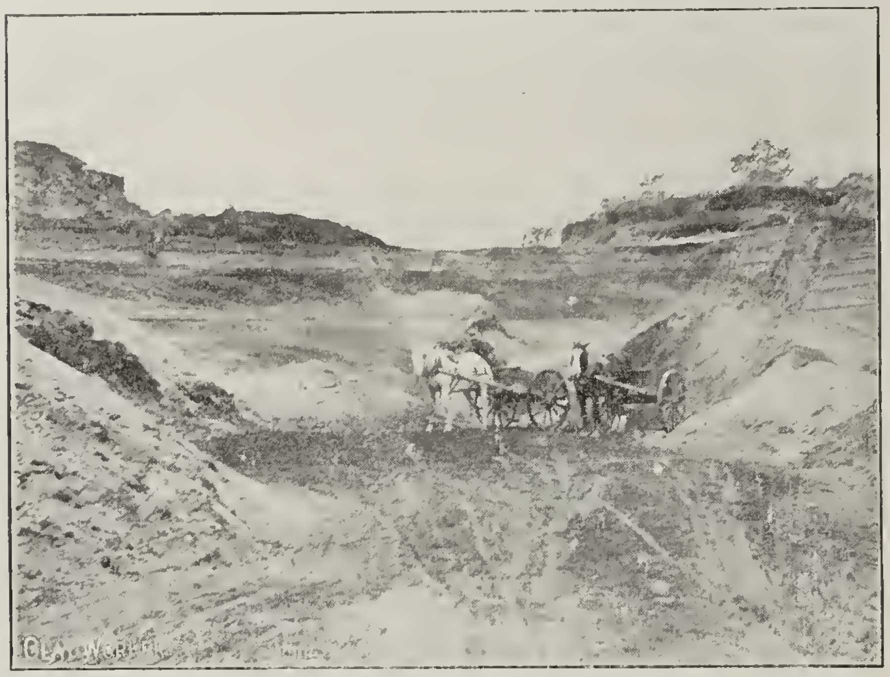
General View of Ontario Paving Brick Co.'s Plant.

The dryer has seven tracks, holding fourteen cars each, giving the dryer a capacity of 28,000. They burn their ware in one continuous kiln and three clamp kilns. The continuous kiln is a sixteen chamber affair, each having a capacity of 22,000 brick.

The Jones avenue yard operates the year round. Nothing but common building brick is made, as is true of the other yard. They have two Hercules combined pug mills and brick machines and a 100 horsepower common slide valve engine. They dry part of their brick in the open, the rest in a dryer about the same size as at the other plant. The burning is done in two down draft and four clamp kilns. During the summer months they make about 40,000 daily, while during the cold, unfavorable months they make a little more than 25,000 daily.

Glimpse of Kilns at Ontario Paving Brick Co.'s Plant.

These plants use wood almost entirely, the only exception being for part of the burn of the continuous kiln and the fuel for engines. Coal is a scarcity in these parts and wood necessarily takes its place, as there is an abundance of timber land in this northern country. The time will come, however, when they will find the destruction of their forests and the cleaning out of their timber lands will rob the country of its beauty and then the battles with the coal trusts will be as vicious in Canada as today in the States.



Sand Bank Canada Sand-Lime Pressed Brick Company.

One of the illustrations in this write-up pictures one of the high piles of wood on the Russell Greenwood Avenue plant. This gives but a small idea of the enormous amount of wood used by this plant, to say nothing of the twenty odd plants in the city using the same kind of fuel.

Joseph Russell, the present owner, is a jolly fellow well met and takes a great deal of interest in the clayworking world, being a member of the National Brick Manufacturing Association and a regular attendant at the annual conventions and is an enthusiast in all matters pertaining to the brick business. A visit to this yard will give the clayworker a good conception of the methods of manufacture by the soft mud plants located in and about Toronto.

The John Price Brick Yard.

Going across to the farther side of Greenwood avenue in a parallel line with the Russell plant to Queen street, we see another veteran yard, that belonging to John Price, who has been in the brick business now for nearly fifty years, having learned the trade when a boy in the country across the briny deep. He is still active and energetic and gets a great deal of pleasure out of his work. He does most of the burning himself and is always to be seen somewhere around the yard, no matter how inclement the weather.

He gets his clay from a twenty-five acre field, which has to be stripped about one foot. Beneath the soil there is a twelve-foot bed of grey clay resting on a five-foot vein of blue clay. Below this clay is a bluish clay containing lime pebbles, which is not worth working. In another part of this clay field he has a two and a half foot strip of reddish yellow clay, which is used for the common red building brick.

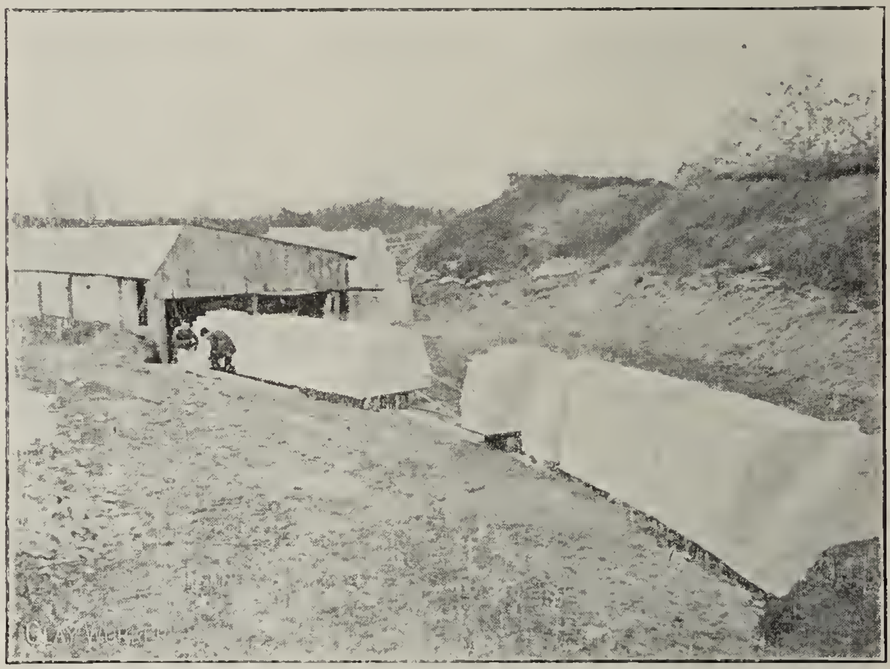
The clay is gathered by shovel and loaded on trucks and carted to the machine. An accompanying illustration shows the clay field of this yard. The machinery consists of a 100 horsepower boiler, one 16 horsepower and a 45 horsepower engine, a Doig pug mill, two Martin brick machines and a Sheldon fan and cars. He makes for the most part a grey brick having a yellow cast, and a common red building brick. The rack space outside holds enough bricks to give sufficient room for an 18,000 daily run.

The brick made inside, running on the average of 26,000 a day, are placed in a six-track dryer, each track holding sixteen cars, giving the dryer a capacity of 30,000. Live steam is used at night, exhaust steam during the day. The Sheldon fan, which has a diameter of 160 inches, is used on this dryer. With the exception of coal for generating power, wood is used exclusively. This yard makes on the average 8,000,000 brick annually, using common clamp kilns entirely.

Other Plants In East Toronto.

Directly to the north of Price's clay field is seen one of Walker Morley's two plants. They use here a yellow surface clay making a red and grey building brick. The two yards of the Walker Morley Brick Company make about 3,000,000 annually, employing two Martin machines and burning in common clamp kilns. One plant is a "setting off" yard, while the other is a rack yard.

In a direct line north adjoining one another are the Morley and Ashbridge yards, both rack yard plants, each using yellow surface clay, the Martin machines, clamp kilns and burning with wood. These plants weather their clay.



Sand-Lime Brick Ready for Market.

Another step north, we find the Bell Brothers plant, which makes the usual red and grey brick, but dry their ware in a Sheldon dryer. This dryer is built of brick, the only one to the writer's knowledge in Toronto. The kilns are common clamps, with the exception of two Case up draft kilns. The usual run of machinery to be seen in other soft mud plants is found here.

Crossing the Grand Trunk tracks, we come to the Logan brick yard, owned by John Logan. This has a daily capacity of 18,000, using two engines, one a 40 horsepower, the other 50, the Martin machine, a Sheldon dryer, one permanent down draft kiln and six clamp kilns.

To the west of Logan's yard, just across the road, are located the Albert Wagstaff, Isaac Price and Webb's brickyards. Albert Wagstaff has a steam dryer, one down draft kiln and several scove kilns, making 25,000 daily. Besides a Martin pug mill and brick machine he also uses a crusher. The clay is blasted and drawn up in end dump cars. Isaac Price uses clay from the same bank, making a red stock brick. He has three permanent down draft kilns and several clamp kilns, using a rack yard for drying.

The Webb brick plant has a Hercules machine, 20 horsepower engine, two down draft and one up draft kilns, making a common soft mud sand brick, burning with wood and drying in a rack yard.

On our way back from the Russell plant we passed the Dave Wagstaff yard, near the Grand Trunk tracks, which is about the same as the neighboring yards. The Sawden yard, located to the west of the Russell plant, has about the same general outfit, making building brick, having a daily capacity of 18,000.

Ontario Paving Brick Company.

Journeying to the western suburb of Toronto, taking a Weston street trolley car at Toronto Junction, we again reach a nest of busy clay plants, all of them common soft mud yards with the exception of the Ontario paving brick yard.

This plant makes a paving brick and block, using a shale hauled to the plant in wagons from the banks of the Humber River, two and a half miles away. This shale is mixed with a clay taken from a near by field. The raw material is stored in a large clay shed where it is left until needed.

The mixed clay and shale is dumped into two American Clay Machinery Company's dry pans and elevated to Dunlap screens. The screened clay drops into a hopper, from which it goes into a Raymond pug mill and thence to a Raymond brick machine. A Raymond side cutting table and two of their Victor represses are constantly employed, giving much satisfaction.

The brick and block are taken from the presses and placed on cars holding 550 brick or 420 blocks. These are pushed into a nine-track dryer, utilizing exhaust steam.

Five down draft kilns are used for the burning, three of them having a capacity of 160,000 each, while the other two are smaller and hold 100,000 each. The daily output of the plant is 21,000 block and 27,500 brick. Wood is used for the water smoking period and coal for the rest of the burn. Two 75 horsepower boilers and a 100 horsepower engine furnish the power for this plant. They run the year round, with the exception of six weeks for repairs, employing forty odd men besides the teamsters.

The one noticeable feature of this plant is its cleanliness. Everything is in perfect order and remarkably tidy and well kept for a brickyard. They make a hard, impervious product, which has a ready market. This is the only paving brick plant in this vicinity and will no doubt be of interest to many clayworkers.

Clay Derrick in Operation Port Credit Brick Co.'s Plant.

Mr. Wm. Pears is president and general manager. It is due to his untiring efforts that the paving brick industry is what it is today in Toronto. With the awakening of the people to the true value of durable brick pavements, laid right, and the best of brick employed, it will not be long until the asphalt will have as hard a job to keep to the fore in Canada as it has in the States.

Other Clay Plants in Western Toronto.

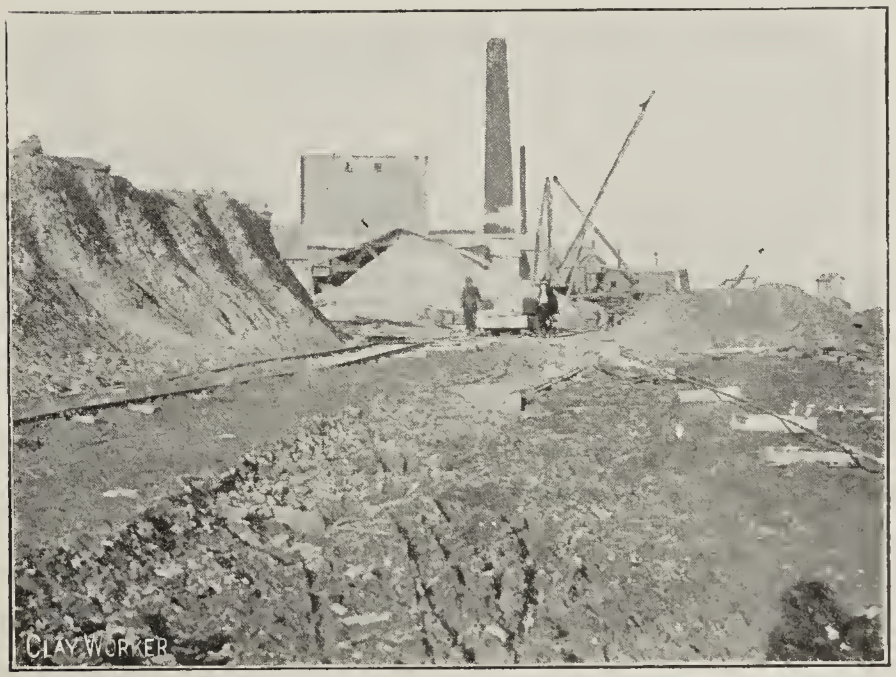
In the neighborhood of The Ontario Paving Brick Company's plant there are nearly a dozen soft mud brick plants. Pears has a soft mud plant several squares to the north. The Lainson & Sons, James Lochrie, Brown Bros., Wakefields, Mason, Smith, Townsley, Hinde, Bushell, Frost, & Tittley and Pears brick yards are all about the same size, using the yellow surface clay, with the general run of soft mud machinery for from twenty to forty thousand capacity, drying in the open, using rack yards and burning in common clamp kilns with wood entirely. The Lochrie yard differs from the other yards only in the fact that they employ electricity as a source of their power. Near the Pears soft mud yard is a small drain tile and flower pot factory owned and operated by Wm. Stonehouse.

Canada Sand-Lime Pressed Brick Company.

In addition to the many clay plants in Toronto, there is an up-to-date sand-lime brick plant operating in the western part of the city, which will be visited with interest by all the manufacturers who are anxious to see what their competitors are doing, how they manufacture their product and the grade of ware turned out. This plant was erected during the past year and is manufacturing a good grade of sand-lime brick. They have an enormous bed of fine sand at the rear of the plant, a portion of which is pictured in one of the illustrations of this article. The sand is taken in dump cars to the top of a steam sand dryer, into which it is dropped. This is an immense metal tube twenty-five feet long, having two shells, the diameter of the inside one being three feet. The inner shell is heated by means of exhaust steam applied at the upper end of the sand dryer, passing between the two shells. The revolving dryer is set on an incline and the sand is thus allowed to work to the lower end by means of gravity, the sand dropping into an elevator which carries it up into a revolving screen. The screened sand drops into a large bin, while the gravel is taken to the outside of the building.

The sand drops to a measuring machine below the bin. This measuring machine is one of Berg's latest patents and consists of a circular revolving steel plate, having three pockets for lime, three for sand and three for the coloring material, thus making the measuring device wholly automatic. The measured material drops into a mixer below the plate and is then conveyed by means of an elevator up to the second floor, where it goes to the wet mixer. This wet mixer consists of an auger which carries the material as it is being mixed wet into a hopper, which is located directly over the Berg four-mold press.

The brick are taken from the press and loaded onto cars which are then pushed into one of the two immense 76 by 5 feet cylinders. These are also made by Berg, who is now one of the leading machinery men in Canada and has his office in the Manning Chambers, Toronto.



Delivering Car of Shale to Derrick.

The second cylinder is used for the hydrating of the lime. The lime is taken from the cars and stored in a large room, from which it is taken in buckets of known capacity and emptied into steel boxes. These boxes of lime are put on three-foot rack cars, sixteen boxes to a car, each box holding fifty pounds. The filled cars are shoved into the cylinder, which is sealed up at both ends when full. Steam at 125 pounds pressure is used for hydrating the lime, this being accomplished in one day, giving them enough lime to run them two whole days. After the lime is hydrated it is stored in a hopper which empties into the measuring machine. It takes but twenty-four hours for the manufacture of the brick. When the cylinder heads are taken off in the morning and the cars are pulled out onto the track at the side of the plant the white piles of brick look beautiful in the sun, a white vapor coming from the warm brick.

The power for this plant is furnished by a 150 horsepower boiler and a 75 horsepower Inglis Company engine. They have a small testing cylinder for making tests for their product. All of the repairs are made in a small tool shop in connection with the engine room. They make on the average about 20,000 brick daily, having no chance to stock up their yards, as there is quite a demand for their product. This is only one of the many sand-lime brick plants in which Berg has installed nearly all of the machinery. The owners of the plant are prominent business men of Lindsay, Ontario. Mr. Robert Kennedy is manager.

Port Credit Brick Company.

Located on the shore of Lake Ontario twelve miles to the west or Toronto, easily reached by trolley or steam car, is the large plant of the Port Credit Brick Company, which is turning out a fine grade of building brick and expects in the near future to have a daily capacity of over 250,000 brick.

The plant has changed hands many times, due to poor management and the lack of knowledge in the brick business. The last company lost in the neighborhood of $90,000 through poor judgment in their investments. They were bought out by prominent Toronto business men, who, it is safe to say, will turn the failure of this plant into a glorious success. They have started the ball rolling in the right direction and have torn out all the old machinery, installing the very best to be found in Canada in its place, and have in fact remodeled the whole plant, until one would hardly recognize it as the same yard. It was certainly not for the lack of raw material or shipping facilities that the former firms failed, for they have seventy-six acres of a fine grade of shale, with the Grand Trunk and Canadian Pacific railroads running past their very doors, and with beautiful Lake Ontario washing the shore a few rods away they certainly do not lack a water supply. The failure of the former owners can only be attributed to their lack of knowledge in clay manufacturing.

The large shale banks have about eighteen inches of stripping on the surface. Below this is over one hundred feet of shale, being hard and difficult to work after it reaches the eighty foot level. The shale is excavated by means of a large 60 model Marion steam shovel, which was built for rock excavation. The Marion steam shovel dumps the shale into large wooden beds set on heavy cars. These are drawn up to the plant by means of a horse, where the beds with the shale are lifted by means of a derrick operated by a six by eight hoist engine and swung to the top of a high pile of shale left in front of the three dry pans. One of the accompanying illustrations shows the derrick lowering the bed of shale onto the shale pile just before dumping. Mr. Miller and Mr. John Berg are seen to the left watching the working of the derrick.

Directly at the foot of this huge pile of shale, the three dry pans grind up this material before it is elevated to the screens. Two of these dry pans are nine feet in diameter, while the third one is perhaps the largest found in this vicinity, being the original design of the master mechanic of this plant. It is eleven feet across the bed.

The screened shale drops into hoppers having eighty-five cubic yards capacity. From these the raw material is conveyed to the three four-mold Berg presses. At the present time, there are nine kilns being constantly fired, one large eighteen chamber continuous kiln having a capacity of 360,000, two down draft kilns of 80,000 each and six up draft kilns having a total capacity of 280,000 brick. They make in the neighborhood of 100,000 brick daily, using coal entirely. The yard is well stocked with huge piles of coal, nearly four thousand tons now being on the yard, 2,100 tons of which is slack.

The company is erecting large concrete storage bins for their coal in the vicinity of the shale bank. The source of their power is an 85 horsepower engine, which runs the pans, elevators and presses, while a small engine operates the derrick. The company is going to install a much larger engine in the very near future, the foundation for which has already been laid. The company has machine and carpenter shops, doing all their own repairing. A large stock shed has been built on the yard, while they have another large one in Toronto, at the corner of Christy and Dupont streets. They employ one hundred and seventy-six men, not including the office staff. A large, roomy, brick bunk house, accommodating one hundred and fifty men, has been built near the lake, having a large dining room, where good wholesome meals are served. Another one is to be built to accommodate seventy-five more men. At the present time six tents are used as temporary homes until suitable quarters are built to accommodate these extra men. The company is about to move into a large office building which was being completed at the time of the writer's recent visit. This building is a two-story structure, the second floor of which will be used for drafting and accounting rooms. The company has its own horses and carts, using some sixty odd in the city and twelve at the plant, which are housed in a comfortable stable. In the near future the company intends to erect six large down draft kilns to hold close to a total of three million brick. The product is of a good grade of dry press red brick and an easy seller.

General View Port Credit Plant.

Toronto Fire Brick Company.

On the way back to the city on the interurban car, we pass three clay plants worthy of inspection. The first one, the Toronto fire brick plant is located at Mimico, about four miles from Port Credit. This firm does not manufacture fire brick as the name seems to imply, but turns out one of the finest grades of red press brick to be found in Canada. They are a deep red with beautiful shapes and designs and attract every visitor by their uniformity of color and strength. The company owns twenty acres of rich shale, which runs to a depth of one hundred feet. This is taken from the bank by means of steam drills, and blasted. It is then hauled to the plant by means of a drum and cable arrangement, small dump cars run on double tracks being used.

The shale is ground in three Frost dry pans, and then elevated to three screens. The screened material drops into hoppers leading into two Berg presses. The brick are burned in three down draft kilns of 250,000 each and five common clamp kilns, coal being the fuel used. The company will erect three more down draft kilns during the coming year. The daily output at the present time is from 15,000 to 20,000. Besides the two Berg presses they have a hand press which they use for making fancy shaped brick.

The power for the plant is furnished by a 150 horsepower boiler and a 100 horsepower engine. The present plant is almost an enitrely new one, the former one having been torn down the first of the year and the present one constructed. They expect to make fire brick in the near future along with the present product, importing their clay, as there is little or no fire clay to be found in this region. This plant is owned by J. E. Seagram. J. W. Ball is superintendent and A. W. Wright is managing director.

Ontario Sewer Pipe Company.

A few paces from this plant we see one of Canada's oldest and largest sewer pipe plants, this one now in its sixteenth year. They get their clay at Waterdown, Ontario, thirty-five miles from Toronto. They ship the clay in on the Grand Trunk railroad, having sixteen cars in service regularly, using from five to six cars daily. The clay is an alluvial clay having a fine consistency for the sewer pipe ware. The clay runs from twenty-two to fifty feet deep, having a small amount of subsoil on the top which never runs over a foot in thickness. The clay does not need weathering and has less than one per cent. of lime in it. Two wet pans are used for grinding the clay, from which it is carried by belt conveyors to the third floor above the press floor, a fast feed belt throwing the clay directly into the press. They have two presses, one Stevenson and the other Taplin & Rice. They run but one press at a time, the larger one making a run of 7,200 four-inch pipe a day, while the smaller makes 6,000. They have immense drying space, each floor being 139 feet by 60 feet, having a total of 21,000 square feet in all. They employ seven kilns, all down draft, using coal, six of which are thirty-seven foot kilns, while the other is seventy-eight feet. The average burn takes three and a half days. They use a Buffalo Forge Company's fan ventilator and heat their drying floors by means of steam pipes. The power is furnished by three boilers, having a total of 200 horsepower and an 80 horsepower engine. Two dry pans are used to grind the material to be used as their grog; these are located near the clay cellar. This company alone makes half of the trap pipe sold in Canada and turns out a good grade of ware, making all shapes and sizes of joints, traps and pipes up to 24 inches. Neearly all of their ware is shipped by rail to the west of Quebec.

A few miles from this plant on our way into Toronto we come to the Dominion Sewer Pipe Company, located at Swansea, which makes a fine grade of ware, being about the same size as the Ontario Sewer Pipe Company. It uses the same method of manufacture and is almost a duplicate of the other plant. At the present time they are extremely busy, having a larger demand than supply. J. E. R.

DRY PRESS BRICK MACHINERY.

In the advertising section of this paper will be seen a notice that H. S. Simpson, 817 Chamber of Commerce, Chicago, Ill., is dealing in dry press brick machinery. Mr. Simpson is well known in this line and his experience enables him to not only advise pressed brick manufacturers in their method of making brick, but is also able to supply them with dry presses of his own manufacture, and the fact that "Simpson" presses are known throughout this country, Canada and Europe assures prospective purchasers that they are a standard article. If you want dry press brick machinery, or have any trouble in this line, write Simpson.

Written for The Clay-Worker.

NOTES FROM THE ILLINOIS CLAYWORKERS' SCHOOL.

THE STUDENTS in the Ceramic Department of the University of Illinois have organized the Ceramic Society of the University of Illinois. They have the usual enthusiasm of a young organization that should be cultivated and kept strong through this and succeeding years. This, the youngest ceramic society in the country, if not the world, intends to earn distinctions other than that of being the "baby society." They have started out with vigor as well as a proper conception of their possibilities. The following officers bespeak success for the society's ambitious hopes: J. K. Moore, president; H. B. Fox, vice president; G. C. Garland, secretary and treasurer. There are twelve members belonging to this infant society, each having an ambition to prepare at least two papers each year that can be presented to some of our trade journals for publication.

The Ceramic Department of the University of Illinois started this year under very favorable circumstances. There are ten regularly enrolled students, two specials and at least three students now enrolled in other departments in the University who have planned to "switch over" to ceramics this coming semester.

The instructional force is comprised of Mr. R. C. Purdy and Mr. J. K. Krehbiel. Mr. Purdy has had varied ceramic experience and is one of Prof. Orton's proteges. Mr. Krehbiel is a potter and a graduate of the New York School of Ceramics. This school has therefore an instructional force that represents the two older schools.

The recently established State Geological Survey of Illinois has offered excellent opportunity for extensive research in the clays of Illinois, and especially those adapted to paving brick manufacture. The school has investigated about 150 clays during the past summer, employing in this work from twelve to eighteen students on full time for two and a half months. Clay and paving bricks from all the leading paving brick factories of the Middle West have been thoroughly studied, applying every feasible test known to the cramic world, in hope that the correlation of the results obtained may make possible not only the establishment of the value of each of the tests separately, but also their relations to each other. The results of this work will comprise a bulletin report of the State Geological Survey of Illinois. This report will be published some time in mid-winter.

There is now approaching completion in the laboratories of this ceramic school three very extensive researches, one on fritted white ware gazes, another on crystalline glazes and the third on the vitrifying rate or behavior of some sixty clays representing a generous variety of type clays. In the first instance, there are 480 glazes each burned at five different temperatures ranging from Seger cone .010 to 10. In the second instance, there are close to 3,000 glazes representing very wide limits in the molecular and oxygen ratios. In the third instance, duplicate briquettes were burned at ten different temperatures, covering the range from .010 to 10. These briquettes will be studied with three factors in view. First, porosity or decrease in pore space at different temperatures. Second, specific gravity of the burned briquettes as a check on the porosity data. Third, chemical and mechanical composition. From this last mentioned study it is hoped to learn the significance of the rate of vitrification in respect to the toughness and genera physical properties of the burned ware as well as to determine the value of mechanical and chemical analysis as criterions of the pyro-chemcal behavior of a clay.

The university at large is enjoying rapid growth. Everything material, intellectual, personal activity in research, etc., argues for the centering at this university, scholastic opportunities unsurpassed in any part of this hemisphere, if not the world. This is not an idle dream, as has been repeatedly shown by those contributors to various periodicals who follow the growth of our universities and colleges in a statistical way. C. E. RAMIC.

The Collapse of Cement Buildings.—That building materials other than brick have not proven entirely satisfactory was again demonstrated by the collapse of a two-story factory building in Kiel, Germany. This building was being constructed with floors entirely of cement, and collapsed unexpectedly, killing several persons.—Deut. Topf. & Z. Z. No. 73, 1906.

* * *

The Fifty Years Existence of the Firm, Villeroy & Boch.—This German firm, which has a world reputation, celebrated its fiftieth anniversary on September 14, last. The first factory of this firm was and is still located in Dresden, Saxony, but other factories have been built also under the same management. The yearly production of this factory amounts to 3,270,000 marks for 1905, of which 1,494,000 marks was paid for wages. The firm gave the workingmen 50,000 marks for their sick fund, which was estabished by the firm in 1875. The factory employs about 1,600 workingmen in the Dresden factory.—Deut. Topf. & Z. Z. No. 76, 1906.

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Official Requirements of Sand-Lime Brick.—The sand-lime brick manufacturers of Germany certainly have their share of the trouble with inferior quality of sand-lime bricks which are put on the market. The following notice of the sand-lime brick manufacturers of Berlin and the county of Brandenburg explains the situation fully:

"In the interest of the building contractors, and also as a guaranty that only first-class sand-lime brick are manufactured, membership in our association can only be obtained when the brick which are put on the market by our members are according to the specifications of the building police commissioner, which permit as lowest crushing strength 140 kilograms per cubic centimeter. (About 5050 pounds per cubic inch.)—Tonind. Z. No. 99, 1906.

* * *

Seger Cones 37-42.—For all work with high fire resisting qualities the cones up to cone 36 have been used so far. Cones of higher melting points than this are now being put on the market. The composition of the same is:

Seger cone No. 37, Al_2O_3 1.33 SiO_2.
Seger cone No. 38, Al_2O_3 1.00 SiO_2.
Seger cone No. 39, Al_2O_3 0.66 SiO_2.
Seger cone No. 40, Al_2O_3 0.33 SiO_2.
Seger cone No. 41, Al_2O_3 0.13 SiO_2.
Seger cone No. 42, Al_2O_3.

In testing these mixtures Dr. M. Simonis has found that they give good results in an electric melting furnace. The pure aluminum oxide is the same as has been used formerly in the use of the high number cones, and the only difference is the composition in connection with the quartz.—Tonind. Z. No. 111, 1906.

* * *

Fire Resisting, Fire Proof and Refractory.—These three terms are sometimes greatly misused. Under the term refractory we understand, in a technical way, a field which is well defined. It usually applies to clays, and designates a certain degree of infusibility. The melting points which are included in this term of infusibility range not below cone No. 26. If this limit is properly chosen, cannot be argued here, although it might be better to state that cone No. 28 would be a better limit. It is, however, sure that material and products which do not come up to this standard of fusibility can not be designated as being refractory.

Under fire resisting we find quite a lot of products which are not always refractory, but still fire resisting. Under this class we find the earthenware cooking utensils, the chemical stoneware and porcelain, and other articles.

Fireproof is one of these terms which is commonly used for any material which does not burn in ordinary fire. It is greatly misused, and materials called fireproof should be thoroughly investigated as to their fire resisting qualities before they should be termed fireproof.—Tonind. Z. No. 111, 1906.

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Kaadener Green.—On the German-Bohemian exposition which took place this last summer at Reichenberg, we find under the chemical group a mineral which, under the name of "Kaadener Green," is mined by the city of Kaaden. This green clayey material has been known for a long time under the name of copper ore, on account of its green color. An analysis of the material is as follows:

Silica	28.20
Alumina	8.00
Iron oxide	32.40
Lime	4.00
Magnesia	1.51
Potash	3.60
Soda	1.63
Phosphoric acid	0.32
Carbonic acid	5.12
Moisture	13.33
Loss on ignition after deduction of carbonic acid and water	1.89
	100.00

On account of the high percentage of iron this green material can be counted as a mineral color, and is extensively used because it is non-poisonous. It is used also for terra cotta coloring.—Keram. Runudschau No. 34, 1906.

* * *

The Dry Press Brick Situation in Europe.—In a very interesting article on this subject we find some points which are well taken. It starts with the opinion generally expressed in Europe that dry pressed brick are inferior to the brick made by the stiff mud process. That the dry pressed brick manufacture has made great progress, especially in the United States, is certain proof of its success. The great mistake which the brick manufacturers in Europe have made so far is that they have laid all the blame on the machine used for dry pressing, while they have totally ignored the clay question. The preparation of the clay for dry pressing is just as essential as for the wet process. The imitation of the American manufacturing process was a great mistake. This process requires a peridical kiln, in which the bricks are dried from four to fourteen days, and even longer, all according to the material used. In Europe, on account of the higher price of coal, we have to use the continuous kiln system. The clay which is pressed dry, and which is burned in continuous kilns, requires a quite different preparation than if the dry pressed brick were burnt in periodical kilns. The main difference is that the clay should have lost its drying shrinkage, which takes place when clay is dried by a heat of 100 degrees centigrade or higher. This principle is the main difference between the process of Czenry, now used in many European brickyards, and the American system, in which only clay is used which has been air dried and then dry pressed.

The European idea for making good dry pressed brick, which will stand burning in continuous kilns, is that the brick should be pressed as dry as possible. In this connection the clay is dried thoroughly before it is fed to the press, and the press is of a heavier pattern than the one used in America, and usually of the hydraulic system. The bricks made by this process are directly set in continuous kilns, and the results have shown that this method is far superior to the old method, or rather to the imitation of the American process.—Baukeramik No. 38, 1906.

Written for The Clay-Worker.

BUSY DAYS AT CANTON.

Expansion of the Metropolitan Paving Brick Company—Two More Plants Purchased—Total Yearly Capacity, One Hundred and Twenty-five Million Pavers.

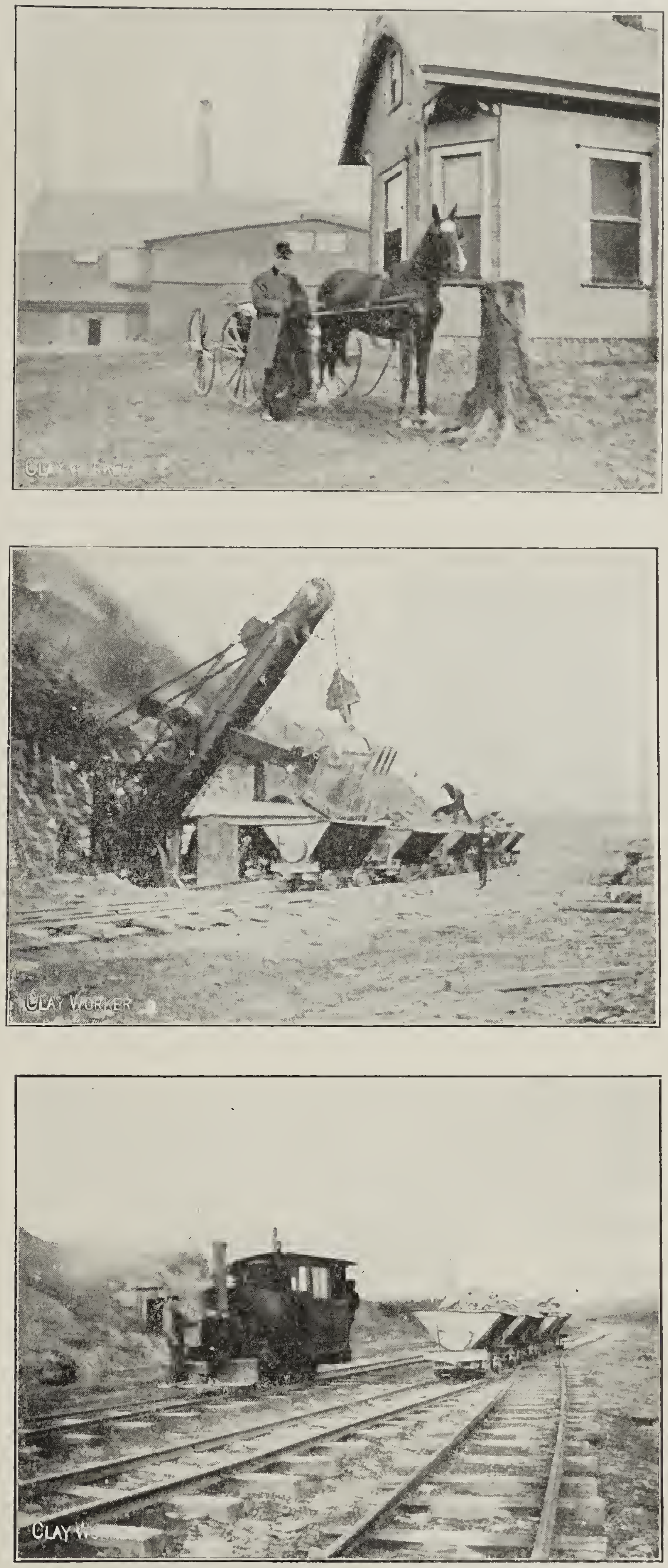
EXCEPTIONAL ACTIVITY is the rule in all industrial centers these times, so the readers of The Clay-Worker will not be startled by the statement that the paving brick plants in the Canton district are all running to full capacity, and expect to continue the good work of turning out the very best vitrified paving block and brick that mortal man can produce right on through the winter months to come, regardless of Jack Frost and his showers of "the beautiful." Zero weather, with its snow and ice, scarcely checks the operations of these busy paving brick plants. Indeed, it accelerates the movements of the workmen and makes the kiln fires much more attractive than they are in the "good old summer time."

The demand for Ohio pavers is so great that there is a constant tendency to increase the capacity of established plants, and new factories are built wherever suitable shale can be found in sufficient quantity and at get-at-able locations. A stop at Canton, recently, though only between trains, afforded an opportunity of taking a look at the renowned Imperial plant, the banner factory of the Metropolitan Paving Brick Company; and we found it turning out its daily quota of nearly 100,000 pavers in regular orthodox fashion. We were surprised to find the yard comparatively bare of brick. Superintendent George R. Chane was discovered directing the work of cleaning up and leveling the yard, which covers an area of several acres, preparatory to the restocking process. By spring, millions of pavers will be piled up, ready for shipment.

Our first illustration shows the yard office, near which stands Secretary Renkert and his favorite roadster—that is, Dobbin is seen standing all right, but Mr. Renkert was too swift for the camera, even. Next we show a view of the great shale bank, where a Model '91 Marion steam shovel, weighing 110 tons, is eating into it. The clay is dropped from the steel dipper into iron dump cars, which are hauled to the plant in trains of from three to six cars by the company's own locomotive. The equipment of the Imperial plant consists of a Bonnot Company's special brick machine, pug mill and dry pans. The shale goes directly to the latter. "We are buying all of our machinery here in Canton now," said Secretary Renkert; "the Bonnot Company has studied our wants in the paving brick business and furnishes us with heavy machinery that they know will stand the strain incident to a large output." During the past season the output of the Imperial plant has been increased about 10 per cent. by building a new 90-foot square kiln and making some changes in the dryer.

The M. P. B. Company now owns and operates six different plants, three at Canton, one at Willow, near Cleveland; another at Minerva, Ohio, and one at Moberly, Mo. The latter is a recent acquisition. The Moberly plant has made an excellent brand of pavers, known as the "Missouri Block," which will be continued. The capacity of the plant has been 40,000 brick per day, but it will be enlarged and the daily capacity increased to from 75,000 to 100,000 brick. The first improvement which is now under way is the addition of a twenty-tunnel Rodgers waste heat dryer. It will be followed by two new 90-foot square kilns, holding about 175,000 brick each. This will make eight of these large kilns, and the number will be increased the coming season. During the winter they will install a new Bonnot pug mill and a Metropolitan piano wire clay screen of their own designing.

A number of improvements is contemplated at the Minerva plant, including a new dryer and half a dozen new kilns. These, however, may not be built until next spring. This plant turns out a fire clay paver from a No. 5 vein of very fine quality, entirely free from sand rock. They are fortunate



Snapshots at the Metropolitan Paving Brick Company's Imperial Plant.

in having a three-foot vein of coal above the first clay, which furnishes all of the fuel required at the plant.

The past season has been one of the most satisfactory the company has ever experienced, and the prospects for the coming year are most gratifying. From present indications, even with their new plants, their immense capacity will scarcely be equal to the demand for Metropolitan pavers. The past season they have made and marketed the equivalent of 90,000,000 brick and expect to increase that figure the coming year to 125,000,000, basing the estimate on a seven-pound brick. About 90 per cent. of their output is ten and twelve pound paving block, the balance being wire cut building and sewer brick. Metropolitan pavers are shipped long distances to points in adjoining States, and each year adds to an ever widening market.

C. & A. POTTS & CO. OPEN AN EASTERN OFFICE.

C. & A. Potts & Co. report that they have had an unusual season, and the demand for their well-known machinery throughout the Eastern States has been such that they found they would be justified in establishing an office in the East. They have now done so, Mr. F. W. Richardson, 39 Courtlandt street, having charge of this office. By this means they hope to be able to reach their customers more promptly and keep in touch with the general trade. Mr. Richardson has had years of experience in erecting brick plants, and is a thoroughly competent man in this line. They will at all times be pleased to meet their friends and customers at this office, and Mr. Richardson will be found willing to give any help or information that may be desired.

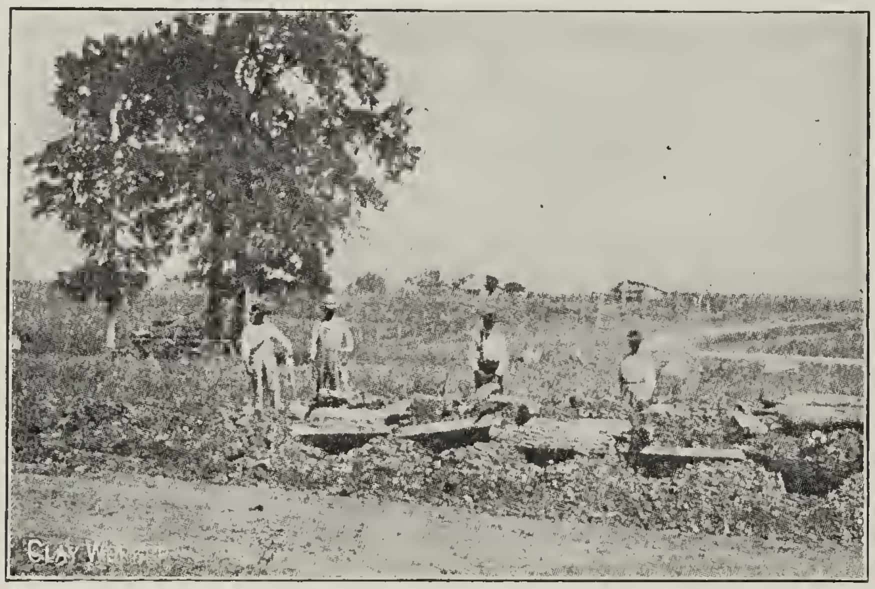


Fig. 1.—First and Second Courses Covered with Lump Clay.

A LARGE CONTRACT.

Ideal Concrete Machinery Company Secures $250,000 Order for Ideal Concrete Block Machines—Making Heavy Foreign Shipments.

The heaviest individual order for concrete machines in the world, it is claimed, was negotiated recently by the Ideal Concrete Machinery Company, of South Bend, Ind., with a large eastern concern, which deals extensively in concrete machine and construction supplies, the order amounting to the magnificent sum of $250,000.

The Ideal Concrete Machinery Company has made rapid strides since its location in South Bend, about two years ago. The company is doing an extensive business in foreign countries. The United States government has constructed the Provincial building at Zamboango, P. I., of "Ideal" blocks, and the engineer reports very favorably on the appearance. Other big contracts have been received for export shipments.

BURNT CLAY ROADS.*

By W. L. Spoon, Road Expert, U. S. Office of Public Roads.

IN LARGE AREAS in the South, particularly in the valleys of the Mississippi and its tributaries, sedimentary clays are found very generally. In these areas there is little or no sand, and the clays are of a particularly plastic and sticky variety; these sticky clays are locally known as "gumbo" and "buckshot." In such localities traffic is absolutely impossible during the wet season, as the wheels of heavy vehicles will sink to the hub. In order to overcome this difficulty the Office of Public Roads undertook an investigation of the matter. Special experiments were carried on in the laboratory to see what could be done in the way of burning or clinkering these clays so as not only to destroy their plastic qualities, but also as far as possible to form hard, brick-like lumps which should be capable of sustaining traffic. Samples of the material were sent from the Yazoo district in Mississippi to the laboratory, and the clinkering point of the clay was found to be sufficiently low to indicate that simple burning of the lumpy clays upon the road surface by means of open wood fires would accomplish the desired result. Following these laboratory experiments it was decided to make experiments on a road, and it can be stated that this experimental road is proving highly satisfactory.

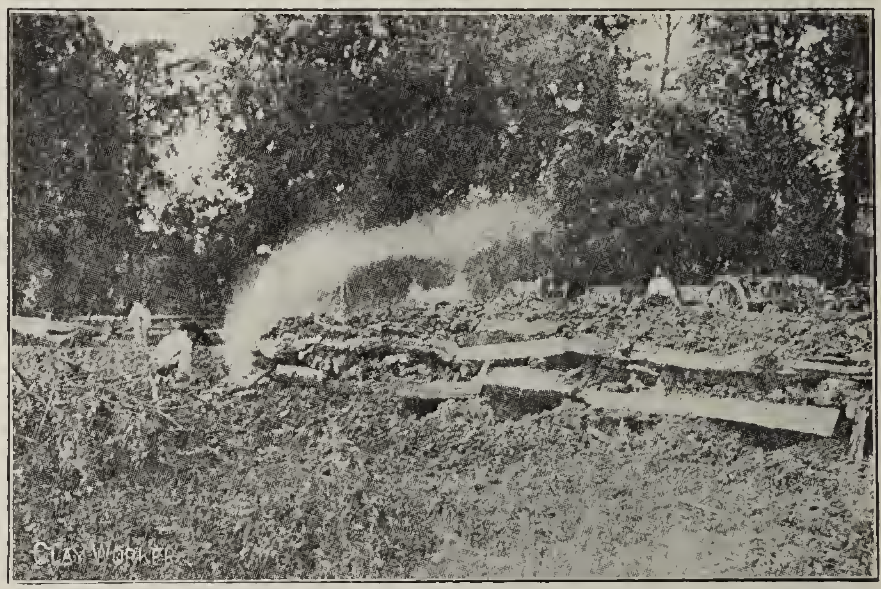


Fig. 2.—Pile of Wood and Clay Completed, Fire Begun in One of the Flues.

Gumbo clay is black, owing to the high percentage of organic or vegetable matter it contains. It is particularly sticky in its nature, and is almost wholly free from sand and grit. After it has been burned, however, the plasticity is entirely destroyed, and a light clinker is formed which, though not particularly hard, when pulverized forms a smooth surface and seems to wear well. It should be understood that not all of the clay out of which the road is to be constructed is to be clinkered, but only a sufficient amount should be rendered nonplastic to neutralize the too sticky character of the native clay. Fortunately the gumbo district is plentifully covered with heavy timber, thus affording an abundance of fuel.

While the only experimental burnt-clay road constructed by the office was in Mississippi, the same methods might be applied with equally good results in the sections of the prairie states that have no other material available for road building.

Good, sound wood, as dry and well-seasoned as it is possible to procure, should be provided before beginning the work, and stacked at convenient intervals along the side of the road. About one cord of wood has been found necessary for 8 linear feet of roadbed 12 feet wide. The wood may be cut to either 4, 8 or 12-foot lengths. Brushwood, if it is dry, as well as chips, bark, old fence rails and railroad ties, coal slack—in fact, any sort of fuel that can be easily and economically obtained, may be used to advantage with the cordwood.

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*From Bulletin No. 27, Office of Public Roads.

After grading the road to an even width between the ditches, it is plowed up as deeply as practicable. It will be found necessary to use four horses or mules, as the extremely heavy nature of the clay makes the work of deep plowing difficult. After the plowing has been completed, furrows are dug across the road from ditch to ditch, extending through and beyond the width to be burned. If it is intended to burn 12 feet of roadway the transverse furrows should be 16 feet long, so as to extend 2 feet on each side beyond the width of the final roadway. Across the ridges formed between these furrows—which should be about 4 feet apart—the first course of cordwood is laid longitudinally so as to form a series of flues in which the firing is started. From 15 to 20 of these flues are fired at one time.

The best and soundest cordwood is selected for this course and should be laid so that the pieces will touch, thus forming a floor. Another layer of wood is thrown irregularly across this floor, in crib formation, with spaces left between in which the lumps of clay are piled. Care should be taken that the clay placed on this cribbed floor is in lumps coarse enough to allow a draft for easy combustion. The progress of the work up to this time is shown in Fig. 1.

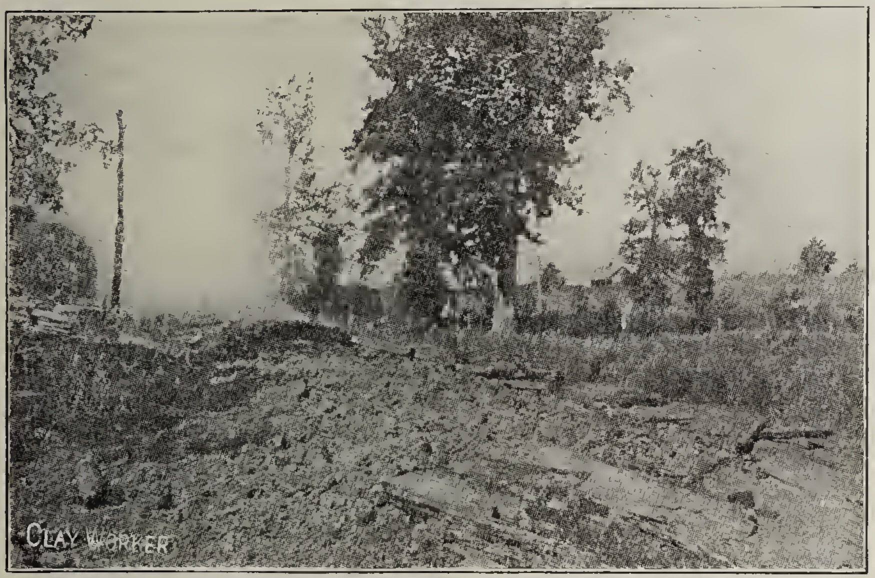

Fig. 3.—One Section of Road Burned and a Second Section Being Fired.

After the lumps of clay have been heaped upon this floor, another course of wood is laid parallel to the first. The third layer is laid in exactly the same manner as the first, and each opening and crack should be filled with brush, chips, bark, small sticks, or any other combustible material. The top layer of clay is placed over all and the finer portions of the material are heaped over the whole structure. A careful arrangement of this cordwood cribbing to separate the clay is important, and the directions should be carefully followed.

The deep covering of clay which is thrown over all should be taken from the side ditches and may be in lumps of all sizes, including the very finest material. It is spread as evenly as possible over the top in a layer of not less than 6 to 8 inches. Finally the whole is tamped and rounded off so that the heat will be held within the flues as long as possible. When coal slack is available the two top layers of wood may be omitted and the coal slack thoroughly mixed with the clay. The final construction is shown in Fig. 2.

It is necessary to get the fires well under way in the flues before the first layer of wood is burned through. The first action of the fire is to drive out the water contained in the clay before the actual burning and clinkering can begin. In burning the gumbo clays a great advantage is gained from the organic and vegetable matter which is contained in the clay, as that in itself aids combustion.

It has been pointed out above that in our practice 15 or 20 flues are prepared ready for firing in one section. If, however, a large force of laborers is available for the work, a greater number of flues can be fired at one time. It is always possible to divide the firing into sections by omitting the charge of wood in one transverse furrow, which may then be covered later and burned in the same way as the rest. Fig. 3 shows one section completely burned and firing begun in the next.

The best results are obtained by firing all the flues of a section simultaneously and maintaing the combustion as evenly as possible. A supply of light, dry, kindling wood, or any easily inflammable material, should be at hand to prevent the fire from dying down in any one place. The firing should invariably be begun on the windward side, in order to obtain the maximum draft. In case the combustion is too rapid in any flue, it may be regulated by banking the mouth of the flue with clay.

After the firing is completed not only the portion of clay which forms the top of the kiln, but the ridges between the flues should be burned thoroughly, so as to form a covering of burnt clay 10 to 12 inches in depth, which, when rolled down and compacted, forms a road surface of from 6 to 8 inches in thickness. If properly burned, the material should be entirely changed in character, and when it is wet it should have no tendency to form mud.

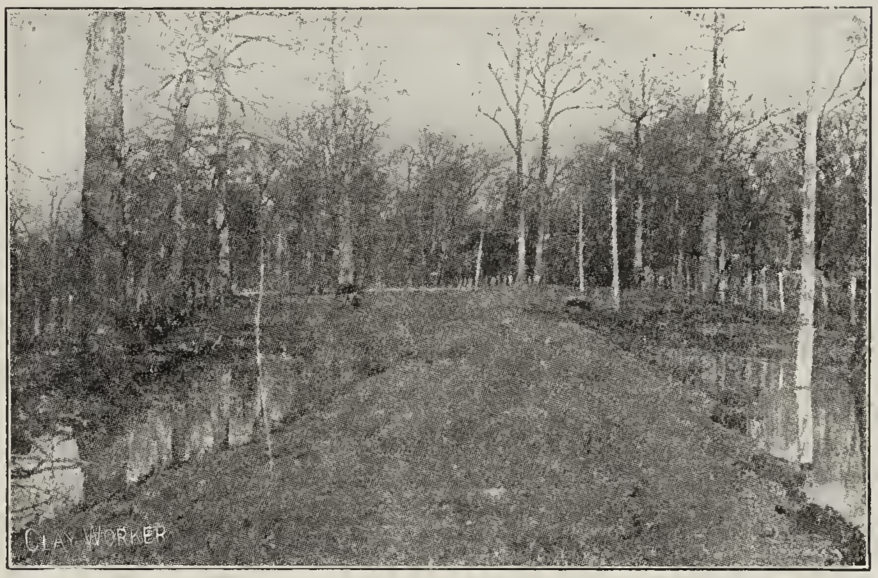

Fig. 4.—Partial View of Finished Burnt Clay Road.

When the material is sufficiently cooled, the roadbed should be brought to a high crown before rolling, in order to allow for the compacting of the material. This can best be done with a road grader. After this the rolling should be begun and continued until the roadbed is smooth and hard. The finished crown should have a slope of at least one-half inch to the foot.

The main advantages of this method of burning a road over its entire length are, first, that the cost of transporting the clay is avoided; second, that the subgrade of the road is burned as well as the material above.

It is, of course, impossible to give the cost of a burnt clay road which will apply to the same work in all sections of the country. Although this form of construction in the South up to the present time has been successful, it can not as yet be said to have passed the experimental stage. The items of cost of the experimental road 300 feet long, as constructed at Clarksdale, Miss., are as follows:

30½ cords of wood, at $1.30 per cord........	$39.65
20 loads of bark, chips, etc..................	6.00
Labor at $1.25 per day, and teams at $3.00..	38.30
Total cost of 300 feet....................	$83.95
Total cost per mile at this rate..........	$1,478.40

In view of the success of the experiments so far made, and the comparative cheapness of this form of construction, it is hoped that the localities which have no hard material available will continue the experiments with burnt clay. Although it can not be denied that the gumbo and buckshot clays of the South are particularly adapted for burning on account of the high percentage of organic matter which they contain, it is none the less probable that many of the surface clays and soils of the States farther north could be treated in the same way; in fact, any soil or clay which bricks or clinkers at a comparatively low temperature should be suitable for the work.

Since the experiment made by this office at Clarksdale, Miss., numerous sections of burnt clay road have been built in that locality, and up to the present time only favorable reports regarding them have been received.

Written for The Clay-Worker.

AMONG THE PHILADELPHIA BRICK YARDS.

THE LEUTEN BRICK COMPANY'S yard presented a brisk appearance, indicative of business, when The Clay-Worker representative called. They are supplying 4,000,000 for an operation at Broad and Chestnut streets; also bricks for two rows of houses at Fifty-fourth and Arch streets; about 2,000,000 for a car shop for Brill's Car Manufacturing Company; a banking house at Fourth and Walnut streets, and two other operations at Eighteenth and Cherry and at Marshall and Spring Garden.

Webster & Keyser have had a busy summer, and if the weather keeps dry this month will be as big a one for them as any all summer. They have been waiting some time to deliver bricks for big operations. The concrete work kept things behind during the month of April, and now it behooves Webster & Keyser to hustle before cold weather strikes them. They shut down the yard two days before Christmas in order to give every man a chance to prepare for the holidays, last year, but they started up again a few days afterward and ran the yard for some time. This, however, has been a fair year, and altogether affairs seem prosperous. Mr. Keyser informs us, with that accompanying smile of his, that life in a brick yard has many saving qualities, and after looking at and basking in that prevalent good nature of his we believe it.

The Peter Byrne estate, brick manufacturers at Twentieth and Cambria streets, is carrying on its business under the management of the late Peter Byrne's three daughters. Their superintendent is a highly capable and reliable man who has spent much of his life in brick yards, and at one time owned a yard of his own. He looks well after the interests of the firm, ready and willing to concede a fair and just favor, but with an eager reach for the fighting gloves should necessity require it. They are serving bricks for sixty two-story houses, which will require 700,000 to 800,000 brick, and have besides many smaller contracts. They have sold all the bricks they have made and have had six to seven gangs running steady.

J. Byrne & Brother, Twenty-seventh and Somerset streets, have several operations to serve. One at Twenty-fourth and Fifth, requires 4,000,000 brick. Two at Twenty-first and Ontario, requires 1,500,000 brick. One at Thirtieth and Lehigh, for James Stephenson, requires 1,500,000 brick. Thus one observes that they are clearing their yard of brick at a rapid rate, and when the time arrives for humanity to get in out of the cold, J. Byrne & Brother can warm their hands in the solid comfort and satisfaction of having achieved their quota.

T. B. McAvoy & Sons always seem to have imbibed the true spirit of geniality and spontaneity, rare gifts of treasure lore that reach forth and embrace all humanity, at times. This has been an extremely busy year with them. Philadelphia has opened up on paving brick recently, doing away with asphalt in favor of paving brick. They have made some improvements at the plant, up at Perkumen, opening up a new clay bank and putting in a new steam shovel.

D. C. Murtha's yard, Sixteenth and Butler, always gives one a sensation of healthy pleasure. In summer the shade of the sheds is restfully cool, and in winter the warm red of the brick stacked up gratifies one's color craving sense of warmth. They are busier at the yard this year than last. They are serving brick principally for house work. They will supply about 1,000,000 brick for a large factory at Fifth and Master streets, also for a cigar factory at Fifth and Columbia avenue, and several other minor factories.

Two hundred houses in one operation and one hundred in another call for brick from Murtha's yard. Up to the present time Mr. Murtha is getting thirty cents per thousand more for brick this year than last.

Prosperity has painted the brickyards of Philadelphia this year—more brick in demand and better prices: a co-partnership that brings the gleam of satisfaction to the eye and a warmth to the heart.

Mr. Plummer, of the Main Belting Company, reports a general and specific improvement in business. They have been obliged to increase their staffs of assistants and to systematize their work more in detail, so that responsibility of extra orders might not prove too heavy a burden.

The Philadelphia brick manufacturers are working up to the "convention spirit." From the general appearance, we should say the Quaker City will make a good showing at St. Louis in February. These yearly reunions cause hearts to beat a little faster, the blood in their veins to run a trifle warmer, and the brains to exert themselves a bit more energetically. Let the good times go on. The longest life is too short to embrace all of its desires. Happy is he who can gratify the greatest of these. M. E. Lockington.

BRICK NEWS FROM CONNECTICUT.

THE brickmakers of the Nutmeg State have had an exceptionally good season. Notwithstanding this fact, a number of them found time to give some attention to politics. R. Clifford Merwin, president of the C. P. Merwin Brick Company, New Britain, was elected member of the General Assembly from the city of New Britain at the recent election, and George E. Green, superintendent of the Merwin Brick Company, was elected to the General Assembly from Berlin.

The yards of Berlin and vicinity are now closed after a very prosperous season. The output of these yards totaled up 126,000,000 brick.

The Tuttle Brick Company, Middletown, Conn., is putting in a new machine. This makes four machines at this plant, and will give them a capacity of 30,000,000 brick a year.

Dennis & Petzner, who recently purchased the brickyard of D. J. Curtis, at Hartford, are putting in a new machine, in order to be ready for spring business.

Building prospects were never better throughout this section. Next season will see many new buildings. Hartford, Conn., is to have a number of new buildings, including two large State buildings, one for a library and one for the armory. Nutmeg.

A Subscriber for Fourteen Years.

Editor The Clay-Worker:

Please find enclosed my check for $2.00, to pay for Clay-Worker. I have been taking it for fourteen years and I am on the lookout for it every month. Yours very truly,

Elizabethtown, Tenn. E. L. Edens.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Finds The Clay-Worker of Much Value.

Editor THE CLAY-WORKER:

Enclosed find money order for $2.00 to renew our subscription to THE CLAY-WORKER. We are much pleased with the journal and find it of so much value that we cannot do without it.

INTERSTATE INVESTMENT AND DEVELOPMENT CO.

A Nebraska Firm's Estimate.

Editor THE CLAY-WORKER.

Enclosed please find $2.00, which pays our subscription to THE CLAY-WORKER for another year. We get some very valuable information from THE CLAY-WORKER, and would not be without it in the brick business or any other business similar, for it is very valuable on account of the different experiences you publish from the different manufacturers, which makes it very helpful. KARR-NICHOLS COMPANY.

Third Annual Convention of National Association Sand-Lime Brick Manufacturers.

Editor THE CLAY-WORKER:

Will you kindly put in your next issue a notice to the effect that everybody who is interested in sand-lime brick is invited to the convention to be held at the Palmer House, Chicago, December 5, 6 and 7. The meeting will be open to all, and we hope for a large attendance.

The program will consist of the following papers:
President's Address.
Secretary's Report.
Treasurer's Report.
Thoughts for the Best Good of the Association.
Grinding Machinery.
A lecture by Prof. Woolsan.
Silo Method vs. Other Methods.
Suggestions as to Pushing the Sale of Sand-Lime Brick.
Paper on Result of Experiments, by Dr. Lazell.
Insurance.
Discoloration of Brick.
Suited Presses.
Can Slag Be Used to Advantage?
Preparation of Lime.
Mixing.
Why Journals Do Not Take More Active Interest in Sand-Lime Brick.

Very truly yours,
H. O. DUERR, Secretary.

The United States Brick Corporation Gives Credit to P. L. Simpson for the Planning of Their Plant.

Editor THE CLAY-WORKER.

In reference to the write-up given our factory in the October issue of THE CLAY-WORKER, we regret that you neglected to mention the fact that the greater part of our machinery was purchased through the National Brick Machinery Company, of Chicago, and that their Mr. P. L. Simpson made all plans and drawings for our factory buildings, both exterior and interior. While our machines were shipped from and manufactured by different concerns, practically the whole outfit was purchased through the National Brick Machinery Company. We consider the system installed to be the only really perfect one for the manufacture of high grade sand stone brick and that in your failing to mention the name of the National Brick Machinery Company an injury has been done them. We will fully appreciate the proper correction in the next issue of your paper.

UNITED STATES BRICK CORPORATION,
By G. W. Bostwick, Mgr.
Michigan City, Ind., November 14, 1906.

The Chicago Situation.

Editor THE CLAY-WORKER.

The pleasant autumn season of "mist and mellow fruitfulness" is drawing to a close. The large numbers of building permits reported to dealers and architects during the summer were missed, but the frutfulness of late rush orders to help finish up jobs before snowfall helped to mellow the sharp edge of discontent, and with every prospect of another good year to come the local trade is looking forward to snow banks and blizzards with something of resignation.

As a matter of fact, most of the dealers report business as unusually good for this time of year. Official reports give Chicago a gain in October of six per cent. in work planned over October, 1905. The autumn activity has been greatest in residences and apartment houses, and there has been noticeable activity in building lines in the northwest section of the city. Substantial little homes and no less substantial apartment buildings of varying dimensions are being erected in every part of town, and the city is filling in the vacant spots and spreading out over new area at a great rate.

Every dealer reports all the business he well can handle, and the great complaint is of the difficulty in handling the material from the factories to the job. Cars have been hard to get, and work has been so plenty in the city that it has been hard to get labor to handle the brick. Teamsters, instead of being on the lookout for work, are at a premium, and this fact adds a difficulty. Cars being hard to get, a long haul from the city frequently appears to be advisable. If the teamster happens to feel like making a long haul the dealer gets his material moved. Otherwise he whistles. This situation is making more business for the "little fellow" with small yards in the city's outskirts and suburbs.

Some people talk about "things being a little dull," but they aren't very dull when the material workman is so much the monarch of the situation as he is at present. One of the big men in the trade here had occasion not long ago to take some bricklayers out of town to do a little piece of work. One of the men from Chicago proved to be absolutely incompetent, and it was necessary to let him go. His fare going and coming was paid, of course, and when he got to the office he was given pay for the full day—only part of which he had worked—and for the time he had put in on the train going and coming.

"Now," drawled his incompetent majesty, having received this, "you can pay me full time for the hour it's taken me to come to the office for my pay, and for the hour it will take me to get back home from here. That's what my union does for me, see?"

His logic was quite convincing, and as it was cheaper to "see" than to require ocular demonstration from his union, it went undisputed.

This is a somewhat different story from a labor story Gates told in an idle hour at the Builders' Club, the other day. Gates is always ready to sound the praises of the American Terra Cotta's workmen, their fidelity and ability. He was recounting the story—printed in the daily papers—of a terra cotta setter working at a dizzy height on a Kansas City skyscraper who lost his balance and fell from the swinging scaffold, but who in his fall caught a rope end after dropping one story, and saved himself by climbing hand over hand back to the scaffold again.

"And do you know," continued Gates enthusiastically, "that fellow took some rags he had up there and bandaged his hands, and by the time the superintendent got around to see if he had fainted, he was setting terra cotta again."

"Come now, Gates. That's a little strong. That spoils a good story," remonstrated a contractor. "It's perfectly all right to believe the fellow reached out and caught the rope as he was passing. We don't mind thinking of his climbing hand over hand to safety. But that will be all. It's on you, Gates."

"Well, since you spoke, I've been thinking it over," said Gates slowly, "and I've been trying to reason out just why that fellow did that, but I have it figured out now. He was afraid we'd dock him for the time he was falling."

The laugh was on the contractor, and the crowd decided that Gates had saved his reputation.

Among the new projects which are assured is a huge warehouse, to be erected by Sprague, Warner & Co., on the north branch of the Chicago river, between Superior street and Chicago avenue. The brick work in this proposed warehouse will make a fine job, as it is figured for 400,000 front brick of high quality. Plans for the talked-of $6,000,000 hotel building are reported to be progressing in the hands of Otto Young and his associates. It will be the largest single hotel building in the world and those in a position to know assert that ground will be broken next April or May. That means that there will be some fine material contracts awarded in the early part of the year, and the trade on a job of this kind will certainly have its fair pickings even though the stone men may get a large part of the front work.

A more modest project, by a few long odds, but an interesting one, nevertheless, is that of the Oliver Typewriter Company for a new building of their own in Dearborn street, west of the ground now occupied by the Colonial theater, which fronts in Randolph street. This building will be only five stories at first, but will be of steel construction and fireproofed throughout. It is estimated that it will cost in the neighborhood of $150,000.

The settling of the trouble at the Marshall Field & Co. building has apparently set at rest all threats of labor disturbance, and there now appears to be no known reason why these projects, together with proposed new hotels, office buildings, railway stations and the like in the downtown districts, and the usual brisk building in the outskirts, should not be continued next year.

"Pop" Bartzen, our building commissioner strenuous, has set in motion a project for reform in the matter of securing permits, which will make him popular even with some of the people he has opposed in the past, maybe. At present a man seeking a permit for a building has to travel to the building commissioner's office, on the fourth floor of the city hall, only to be told that he must begin with the sanitary inspector, get his approval, then pay the inspection fee at the city's collector's office on the first floor; then to the fifth floor, if boilers are to be installed, and get the boiler inspector's approval and pay another fee at the city collector's office. Back to the fourth floor, for the plan examiner to go over the plans, the tangled trail leads; then to the water pipe extension office on the third floor; from there to two departments in the water office; one more visit to the collector's office to pay one more fee, and then back for a final interview with the permit clerk. Commissioner Bartzen, among other things, suggests that one of the collector's clerks be stationed in the building department to receive fees and save the applicant's legwork, and in the busy times that are coming many will rise up and call him blessed if he can put his reform through.

The Chicago City Railway Company is constructing two new power houses at Twentieth and Dearborn streets and at Sixty-third street and Wentworth avenue. Both are to be unusually fine structures of their kind and are to have face brick within and without. The two jobs total about 400,000 front brick. S. S. Kimbell & Co. has the contract. The same traction line has in contemplation another large powerhouse to be erected at Forty-second street and Wabash avenue. This is expected to call for about 300,000 face brick.

Purington repressed pavers to the number of 300,000 are to be used in the first of the new buildings to be erected by the American Tobacco Company, on its new site, at Colorado and Forty-third avenues. Another building is to be put up in the near future. S. S. Kimbell & Co. furnished the brick for the first building.

A little story is current gossip in local circles, and the moral of it is that in selecting your site for a brick factory, it is well to follow the time-worn motto of "Look before you leap," and that in picking your clay bank it is the part of wisdom to give something more than a casual glance to the surrounding country. It seems that a well-known firm here decided that it had found just the place for a brick plant, and accordingly set up its plant near to a hill that looked good—on the surface. A rather expensive equipment was installed, as the company intended to do things up right. Then they began mining for clay and struck a hard and unsympathetic outcropping of limestone. Another spot on the hillside was tried with the same result. It was certainly hard luck, for the territory about there has proved rich in clay and not in stone. Finally, by laying tracks around the hill, the story goes, the people found a spot from which to take clay, and so, after all their trouble, they are able to operate, although, it is said, they have not yet struck anything like the quality of clay they were looking for when they struck rock. SCRIP.

OFFICIAL ANNOUNCEMENT.

THE TWENTY-FIRST NATIONAL CONVENTION TO BE HELD AT ST. LOUIS, MO., FEB. 4 TO 16, 1907.

American Ceramic Society and National Paving Brick Manufacturers' Association Hold Separate Sessions February 4 and 5.

The Sessions of the N. B. M. A. Will Begin Wednesday Afternoon, February 6, and Continue Thursday and Friday, After Which the Time of Delegates Will be Devoted to Visiting Clay Plants, Etc.

AT OUR LAST convention, we received a most cordial invitation to meet next year at St. Louis. The call came from the united clayworkers of that great clay center, and was so earnest, nay urgent, as to be well-nigh irresistible, and we now have pleasure in announcing that arrangements have been made for a meeting to be held there February 4 to 9, inclusive. As in former years, there will be a series of joint conventions. The American Ceramic Society will begin the week, with sessions Monday and Tuesday, and closing Wednesday forenoon. The National Paving Brick Manufacturers' Association will hold its sessions during the same days. The N. B. M. A. will hold its first session Wednesday afternoon and follow with one session each on Thursday and Friday forenoon, leaving the afternoons of those days for the inspection of clay plants and such other sightseeing as visitors may care to indulge in.

In determining to meet in St. Louis, we are influenced in a large measure by the fact that we have never before met in convention west of the Mississippi river, and also by the accessibility of that city from all quarters of the country. The late World's Fair proved conclusively that it is one of the most get-at-able cities on the continent, and we feel assured that this fact and the knowledge that the doors of every one of the great clay manufactories of St. Louis and vicinity will swing open to those who attend, will result in the largest convention in the history of the Association. In every way St. Louis is prepared to entertain and instruct visiting clayworkers who will find in the extensive clay plants, located in and about the city, a means of comparison in modern methods of manufacture that will prove of inestimable value. No city offers for the inspection and edification of our members a larger variety of clayworking industries. Her building brick, paving brick, fire brick, sewer pipe, terra cotta and other ceramic establishments are both extensive and modern in equipment and afford object lessons of importance in almost every branch of clay work. It is needless to say that our members, and those who accompany them, will be received and welcomed with open-handed cordiality, and that no effort will be spared to make the St. Louis convention a memorable event to every participant.

Further announcement as to hotel headquarters, railroad rates, etc., etc., will be made subsequently. Those desiring information as to the requisites of membership, plans for the exhibition of clay products, etc., are requested to communicate with the Secretary, at Indianapolis, Ind.

THE EXECUTIVE COMMITTEE,
JOHN R. COPELAND, President.
THEO. A. RANDALL, Secretary.

CONVENTION DATES.

THE CONVENTION season is near at hand, and most of the associations have announced their dates, which we give below. Every clayworker should set his house in order and plan to attend his own State convention and the National convention as well. It will be time and money well spent. There is an inestimable advantage in meeting and comparing notes with those engaged in a common calling. In clayworking, as in other industries, the sum of the knowledge of many is much greater than the wisdom of the individual.

The National Association of Manufacturers of Sand-Lime Products will hold its third annual convention in Chicago, Ill., December 5, 6 and 7, 1906. See programme on page 513.

The Iowa Brick and Tile Association will hold its twenty-seventh annual convention at Sioux City, Iowa, January 9 and 10, 1907.

The American Ceramic Society will hold its ninth annual meeting at St. Louis, Mo., February 4, 5 and 6, 1907.

The National Association of Paving Brick Manufacturers will meet at St. Louis, Mo., February 5 and 6, 1907.

The National Brick Manufacturers' Association will hold its twenty-first annual convention at St. Louis, Mo., February 4 to 16, 1907. The deliberative sessions will be held, Wednesday, Thursday and Friday, the 6th, 7th and 8th. The balance of the time will be devoted to side trips, inspection of plants, etc.

The Canadian Clay Products Manufacturers will hold their fifth annual meeting at Toronto, Ont., December 12, 13 and 14, 1906. The following program has been prepared:

WEDNESDAY, DECEMBER 12, 1906.

FORENOON.

Reception and registration at Secretary's office, at Rossin House.

AFTERNOON.

2:30 p. m.—Welcome to Toronto by Mayor Coatsworth.
President's annual address.
Secretary-Treasurer's report.
Report of committee.
3:15 p. m.—Lecture by Prof. Coleman, School of Practical Science, Toronto, Ont.
5:00 p. m.—Mining and Preparation of Material, J. S. McCannell, Managing Director Milton Pressed Brick Co., Milton, Ont.

THURSDAY.

FORENOON.

9:00 a. m.—Trip by special train to plant of Don Valley Brick Company, Todmorden, Ont.

AFTERNOON.

2:30 p. m.—Lecture on "Technical Education in Its Relation to the Clay Industries," Prof. Orton, Jr., Ohio State University, Columbus, Ohio.
5:00 p. m.—Down Draft Kilns, William McCredy, Lyons, Ont.
8:15 p. m.—Complimentary banquet to members of C. C. P. M., by Toronto Clay Products Manufacturers.

FRIDAY.

FORENOON.

9:00 a. m.—"Uses of Exhaust Steam on a Brick Plant," A. M. Wickens, Chief Engineer, Canadian Casualty and Boiler Insurance Company, Toronto, Ont.
11:00 a. m.—"Comparative Economy of Construction and Operation of Down Draft and Continuous Kilns," J. B. Millar, superintendent Don Valley Brick Co., Toronto, Ont.
11:45 a. m.—"Brick Spiel," H. de Joannis, editor "Brick," Chicago, Ill.

AFTERNOON.

2:30 p. m.—Lecture, by Prof. Baker, Ontario School of Mining, Kingston, Ont.
4:30 p. m.—"Waste Heat Drying," Wm. Baillie, former superintendent Laprairie Brick Co., Laprairie, Que.
5:00 p. m.—Question drawer.

A NEW BOOK FOR BRICKMAKERS.

"The Clay-Worker's Hand-Book" is the title of a new volume just published, which has been written primarily from the practical standpoint, embodying in book form much valuable information of entirely new matter as well as collecting quantities of data scattered through many pages of scientific journals.

The volume embodies an attempt to sift out from the great mass of material such information as an extensive experience in clayworking has shown to be of value, and the whole is expressed in non-technical language, forming a manual for all engaged in the manufacture of articles from clay.

Bound in cloth, 366 pages, and 33 illustrations, sent postpaid upon receipt of two dollars ($2.00). Address THE CLAY-WORKER, Indianapolis, Ind.

SCOTT KILN DRYING COMPANY CHANGES ITS BASE OF OPERATIONS.

The Scott Kiln Drying Company, with headquarters at Columbus, has been dissolved and the business of the company transferred to a Michigan corporation of the same name with headquarters at Detroit. The change of location and of management is due to the rapid expansion of business, the new management in Detroit being better prepared to take care of the large business which is being done. The Scott system has already been described in these columns, since which publication a number of important plants have been put into successful operation, and the prediction made at that time that the system based on Mr. Alex. A. Scott's patents, controlled by this company, would revolutionize the brickmaking industry is now being verified.

LARGEST SINGLE ORDER FOR SEWER PIPE MACHINERY EVER PLACED.

The Stevenson Company, noted manufacturers of sewer pipe and brick machinery at Wellsville, Ohio, have followed the completion of a mammoth new steel structure for machine shop and foundry and installation of electric-driven new machinery, with the erection of a very handsome new brick office building, fireproof, and commodious in the extreme. They have had an exceedingly busy year building machinery for various new sewer pipe and brick plants, and getting out repairs for the multitude of old established works throughout Uncle Sam's and King Edward's dominions, where their machinery is making records and swift money for their owners. It remained for the Robinson Clay Product Company, of Akron, Ohio, to apply the cap sheaf to their year's harvest of orders, by making requisition upon them for what is confidently declared to be the largest single order for sewer pipe machinery ever placed in this, and possibly any other, country It comprised the following: Four 9-ft. dry pans, ten 8-ft. wet pans, one 44x60x21-in. sewer pipe press, four 40x52x20-in. sewer pipe presses, two sets of socket dies, from 2-in. up to 24-in, seven clay carriers and feeders.

Notice how the Robinson Clay Product Company orders machinery. Notice, also, from whom they order it. See page 529. This is a pointer for you.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-THIRD YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

TERMS OF SUBSCRIPTION:

One copy, one year (in advance)	$ 2.00
One copy, one year (if not paid in advance)	2.50
Six copies, " "	10.00
Ten copies, " "	15.00

Foreign subscriptions 65 cents additional.

☞Subscribers when ordering a change of address should give both the old and new address.

ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVI. NOVEMBER, 1906. No. 5.

CURRENT COMMENT.

It's about time for the postman to begin to make a noise like new calendars.

* * *

The distinction between enterprise and greed is the difference between ourselves and the other fellow.

* * *

Did you know that this country is getting to be quite a clearing house for nations? Over $25,000,000 worth of merchandise bought from abroad is re-sold abroad annually.

* * *

Uncle Sam's figures show that $32,000,000 worth of goat skins were imported during the past year. Look's like that's enough without so much "lamb" skinning by frenzied financiers.

* * *

Every once in a while somebody reminds us that we are all really dependent on the farmer. What of it? What better or more reliable source could we get to furnish our welfare than the great American farmer?

* * *

Cuba would probably be a more desirable addition to our domain if there were more workers and fewer natives anxious to be fattened at the government troughs. We already have sufficient of the latter class at home.

* * *

The exportation of canned goods of one kind and another during the past year amounted to $18,000,000, about one-third of which was canned beef. Development in the tropics is materially enlarging this trade. The canneries consume lots of brick.

* * *

The Government Statistical Department has been recently making explanations in regard to the market decline in our exports to China and Japan that took a trend almost into the land of apology, and right on the heels of this comes a sort of governmental apologizing stunt in regard to the treatment of the sons of the little brown men out on the western coast. Wonder what next?

* * *

Students of criminology have figured it out that the lack of some useful trade is a constant and potent factor in the cause of crime. One more strong argument in favor of pushing the trade school idea. Most trades need more young men, and every young man needs to know a trade.

* * *

The National Congress of Uniform Divorce Laws drafted a bill at its recent meeting in Philadelphia reducing the grounds for divorce to six counts: infidelity, felony, bigamy, desertion, habitual drunkenness and intolerable cruelty. That's closing up a little, but there is still room for great possibilities by straining a little on "desertion" and also apparent flexible limitations in that term "intolerable cruelty."

* * *

If the business men down in the Old Dominion are "in misery" because freight only moves about 2½ miles an hour and would "love company," they can get it from the American Shipper's Association, which has figured it out that the average freight car only works one hour in the twenty-four of each day, and travels, loaded, at the wonderful (slow) rate of 15.95 miles in a day. The balance of the time is spent in "loafing." No wonder tramps take kindly to freight cars—they are kindred spirits when it comes to the subject of strenuous work.

THE CLAYWORKER'S THANKSGIVING.

There is little need to elaborate on the fact that clayworkers have much to be thankful for this year. In addition to the universal prosperity, we may well be thankful for the growing sentiment in favor of better homes, more substantial and more beautiful buildings, which is apparent in every section of our country. Evidently we are growing in wisdom, as well as in material wealth, and in refinement, too. Verily, the world is growing better, and that of itself is something to be thankful for. Can we show the spirit of thankfulness in any better way than by an effort to cultivate the best that is within ourselves, and also by encouraging others by kindly words of appreciation for the little helps of every day life. It is an indisputable fact that we grow in grace by doing graceful things for others. It is fully as easy to say a kindly word of our neighbor or competitor as to criticise and complain, and we ourselves will be better and happier if we see the good side of things and not the bad. So let us forget for a while that there are bad competitors in business, forget that there are boodlers in public offices, forget that our neighbors are unneighborly, and lend our thoughts to the good things of life, and we will find that we have many blessings for which to be thankful.

THE EVERLASTING QUALITIES OF CLAY PRODUCTS.

Now, turn to the material things of this world. It is meet that a man should sow for the future as well as reap during the present, and there is no time like the coming of winter to make preparations for thorough study and research into the land of possibilities, with a view to sowing the seeds for an enlarged use of clay products. In this connection there are two things which might be given special attention this winter with fruitful results. One is in the field of front brick and architectural terra cotta, and the other is in the development of the common brick industry. It may be recalled that the branch of the clayworking industry which seems to be making the greatest strides in the way of increased use is in front brick, which in turn is followed closely by terra cotta. This is not only evidence of recognition of true merit, but it is evidence of a growing and not a waning appreciation of this product, notwithstanding the strenuous efforts that have been made to promote competitive materials. There never was before, and probably never will be again such a fight made by competitive structural material as has been made against brick during the past two years, yet in the face of all this the government figures show a great increase in the use of structural clay products. Even concrete buildings of magnitude receive facings of brick to improve their appearance, and on all sides, wherever artistic effect is wanted, it is clay products that are winning in favor. They will win in favor still more, too, as the true sense of appreciation becomes deepened and more fixed, and as the clayworkers themselves come to realize more fully the great importance of their product. In this connection, it is in order to call attention once again to the story "In Perpetuum Hominum Memorium," which is concluded in this issue, one purpose of which is to arouse in the minds of clayworkers themselves a fuller appreciation of the everlasting qualities of their wares. As has been so strikingly set forth in this story, the one indestructible building material is burned clay. It is the only material that will withstand intense fire, frost, and all the ravages of time, without disintegration. In this it stands even ahead of stone; and when to this quality is added that of pleasing artistic effect, the range of which we have only begun to explore, it should arouse the enthusiasm of all clayworkers to the point where they will not only think greater things, but will strive to accomplish greater things, and to sow and cultivate the seeds of intelligent and enthusiastic appreciation of the merits of burned clay.

WHY WE SHOULD URGE AN INCREASED USE OF BRICK.

The common building brick industry stands in need of seed-sowing service. As the great common people are the base of all industrial life, so the common building brick is the backbone of the clay industry. The use of common brick is increasing right along, but not in proportion to its merits as a building material. Brickmakers should miss no opportunity of bringing the merits of brick to the attention of builders. Not only is the time ripe for seed sowing, but the ground is in excellent condition for cultivation. Our forest wealth is disappearing to an extent that ere long all available timber will be needed for cabinet work and special uses outside of structural work, and some other building material must take its place. If this fact is brought to the attention of builders, they will turn a willing ear to those who advocate a more lasting material. It is natural for people to want to build better homes and to build them of material that will withstand the ravages of time and stand as a monument to the builder long after he has himself turned to clay. This is a worthy pride, this pride of permanent home building, and should be encouraged in every possible way, not alone because it means material profit to the brickmaker, but because it will help mankind in general by encouraging the use of the best building material on earth. To build better is to think better and to live better.

TRADE LITERATURE.

"Testing and Controlling Apparatus" is the title of an instructive treatise on the drying of clay products and the burning of clay wares. It contains illustrations of the most approved appliances and tells how they may be used to best advantage. A copy can be had for the asking by addressing the Richardson & Lovejoy Engineering Company, Columbus, Ohio.

"Jeffrey Pulverizers" is the subject of catalogue No. 31, recently published by the Jeffrey Manufacturing Company, Columbus, Ohio. It contains illustrations of their entire line of pulverizers, ranging from their Jeffrey "Baby" pulverizer to their immense hammer machine, with which is shown a new automatic feed device. They also illustrate a method of operating these machines by electric motors with direct connection. If you are interested, write for a copy, mentioned The Clay-Worker.

Exhaust steam and waste heat brick and tile dryers of the Bechtel type for soft mud and stiff clay brick are illustrated and described in an attractive catalogue just issued by Bechtels, Waterloo, Ont. Building brick manufacturers will find a number of other interesting features, such as soft and stiff mud trucks, etc. They will be pleased to mail a copy to any brickmaker desiring it.

The Mack Manufacturing Company has favored us with a copy of its new catalogue treating on the paving of city streets. It is beautifully illustrated with two-color halftones, giving views of the cities in which Mack brick are used. It also illustrates in a graphic way the comparative size of load which can be drawn over various kinds of roadway, by which it is seen that a heavier load can be hauled over a brick pavement with less power than any other modern roadway. A similar illustration shows that a brick pavement can be kept clean more easily than other pavements. We presume a copy can be had on special request to the Mack Manufacturing Company, Philadlphia, Pa.

"The Steel Square."—The Industrial Publication Company of New York City has recently published a valuable booklet by Albert Fair, called "The Steel Square." It treats on the subject of the steel square as a calculating machine in a simple manner, not dealing with it in the terms of the mathematician. It gives simple directions for using the common steel square, for the solution of complicated calculations which occur in the every-day work of carpenters, builders, lumber dealers, plumbers, gasfitters, engineers, electricians, tinsmiths, blacksmiths, masons and many others. The author gives hints and caution in the selection of squares and explains the difference between graphical and arithmetical methods of calculating; also going into many problems in proportion. The booklet contains 81 pages, with over 27 figures, not including several tables. This book can be purchased from The Clay-Worker, and will be mailed, postage prepaid to any address in the United States, on receipt of price, 50 cents.

"Clays; Their Occurrences, Properties and Uses," is the title of the latest book from the pen of Heinrich Ries, Ph. D., Assistant Professor of Economic Geology in Cornell University, Fellow Geological Society of America, member of the American Ceramic Society, member of American Institute of Mining Engineers, and the author of "Economic Geology of the United States." This book treats at length in a clear and interesting manner the occurrence, properties and uses of all the many different classes of clays, from the common yellow clay to the most rare formations. These are treated from the American standpoint, going thoroughly into the detail of the clays of this country. It is of great value to the clayworking world and will be thoroughly enjoyed by all who are interested in the origin, composition and working abilities of the many different formations found in this great clay manufacturing country of ours. Prof. Ries divides his subject matter into eight important chapters, each treating in full the subject handled. An outline of the book, the origin of clays, their chemical and physical properties, description of the various kinds of clays, giving their composition, character and distribution, and the methods of mining and manufacture of clays to be found throughout the United States, gives an idea of how comprehensive this valuable volume really is. The book is bound in cloth and consists of 490 pages, and nearly one hundred illustrations, including many fine pictures of different clay banks, pits and fields, some of which show the methods of working the clay. Various outfits for plants, kilns, machinery, dryers and exterior views are pictured, which add materially to the value of the book, the price of which is $5.00. Copies will be mailed, postage prepaid to any address in the United States and Canada. Send orders to the office of The Clay-Worker, Indianapolis, Ind.

Written for THE CLAY-WORKER.

THE CLAYWORKER'S THANKSGIVING.

In thanking Thee, dear Lord, for common clay,
We thank Thee for the elemental all:
The perfect model Thou didst make, one day,
In distant Eden, ere there was a fall.
The element most subtile and sublime,
In which are writ the tragedies of time.

For inexhaustible rich clay-mines, where
The embryo of cities lie; where domes
Are born, and where are fashioned, square by square,
The sacred walls of temples, and of homes.
The element that lifts the mountain's head,
And makes the restless ocean's solid bed.

For that first exquisite—the Fictile, art,
That makes, 'neath man's caressing labor, such
Enchanting forms of beauty, as impart
To life's grim look a fair and gracious touch.
The element in wares of porcelain,
And polychromic beauty they contain.

For smooth and easy walks, where tired feet,
In ceaseless city-wise, forever go.
For friendly and protecting walls, that greet
The friendless, whom no walls of home can know.
The element of statues, great, that stand
As sacred sentinels, throughout our land.

For all the treasures of the under-earth,
In veins, and mines, and store-houses of clay,—
In darkness locked, far from the dole and mirth
That mingle in the upper world of day.
The element that spreads the golden-rod,
The ripened harvests, and the emerald sod.

We thank Thee for this spacious old clay home,
So strongly made, so beautifully planned,—
Where we are free to praise Thee, as we roam
The wondrous stretches of its sea and land.
The element that walls the rivers in,
And marks the confines where space-worlds begin.

And lastly, do we bless Thee for the gift
Of that small, sacred, peaceful bed
Of clay, reserved for each; where flowers lift
Their smiling faces o'er the silent dead.
The element that mingles clay with clay,
For holy keeping.—till some happier day.

—MARGARET ANDREWS OLDHAM.

A BRICK.

BY FRANK HONEYWELL.

"That man's a brick."—A thing of clay I see,
Baked to an adamant consistency,
Digged from the earth and worked and in its mold
Crowded and pressed and dried and burned and sold.
But now the human brick an honor gains
Unbounded by six geometric planes:
The common brick is laid into a wall,
Sealed by its mortar firm against a fall;
The brick that walks and sees and breathes, howe'er,
Blessed with an intellect with love awake,
Brave in forgetfulness of self, with care
Seeks to work blessings for humanity's sake.
The human brick, when honor's walls are broke and swayed,
Leaps into place and sticks without the mortar's aid.

—Exchange.

YOU AND I.

Before man parted for this earthly strand,
While yet upon the verge of Heaven he stood,
God gave a heap of letters in his hand
And bade him make with them what word he could.
—Matthew Arnold.

Had I been there on that red-letter day,
And God given me an alphabet to try,
Two dozen letters I'd have thrown away
And spelled "life's happiness" with "U" and "I."
—From the November Delineator.

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IF YOU KNEW the importance of controlling the draft of your kilns and boilers, you would not be without a draft gage.

We have all kinds in stock.

The Richardson-Lovejoy
(See page 553.) Engineering Co.

WANTED, FOR SALE, ETC.

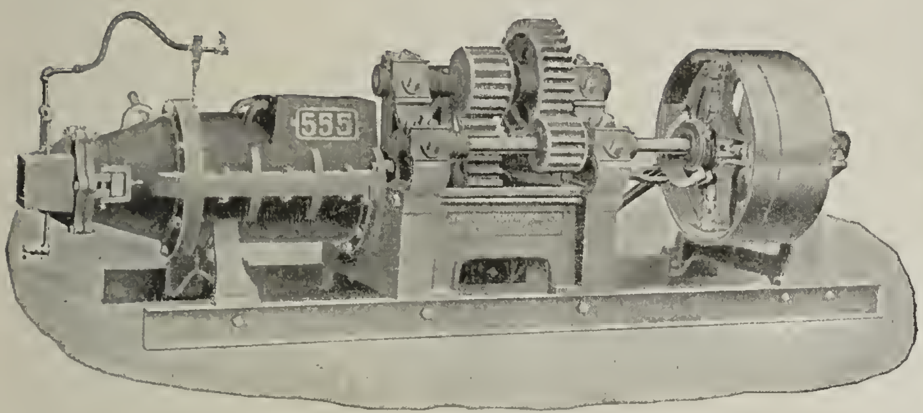
WANTED—Copies of Davis's Bricks, Tiles and Terra Cotta. Good price will be paid if same is in a good presentable condition, and free from mutilation. Address
APPRENTICE,
10 1 L Care Clay-Worker.

FOR SALE.

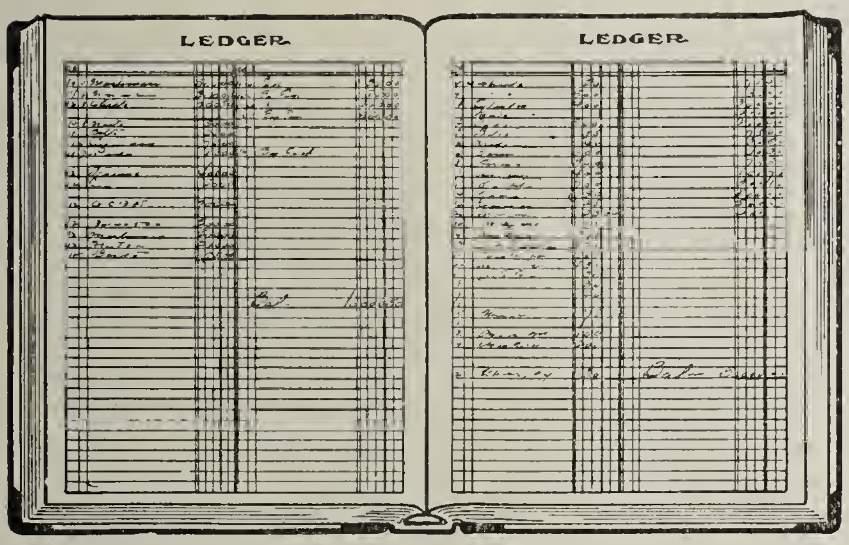
1 Hercules Sr. soft mud brick machine.
1 9-ft. Raymond pug mill.
1 "777" brick machine.
1 Potts disintegrator.
72 hand sand moulds.
1 9-brick side-cut Bonnot hand cutter.
1 Bonnot end-cut hand cutter.
200 dryer cars, 10 decks, 4 pallets to the deck, and 6,400 wood pallets for same.
300 steel pallets 33x11 inches.
All in good condition.
THE TRUMBULL BRICK CO.,
11 1 d Warren, Ohio.

For Sale, Wanted, Etc., Ads Continued on Pages 534, 535 and 536.

"RAYMOND'S"

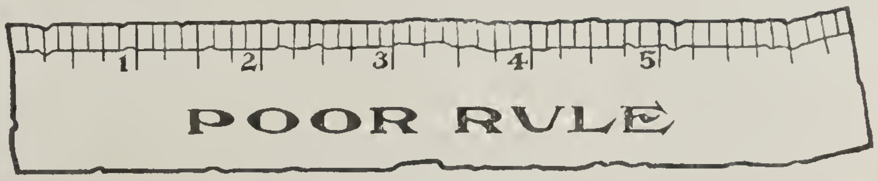


THE BEST



HANDSOME PROFITS

ENJOY LIFE



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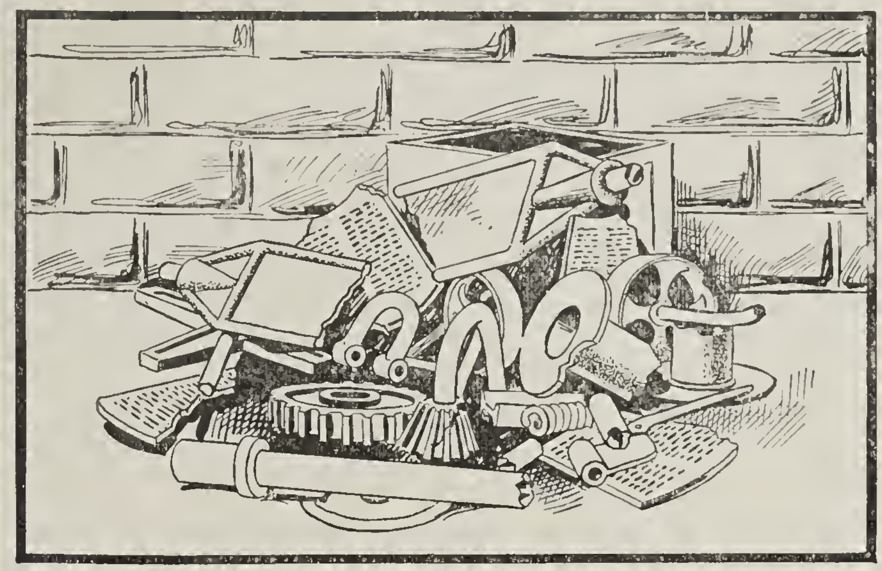

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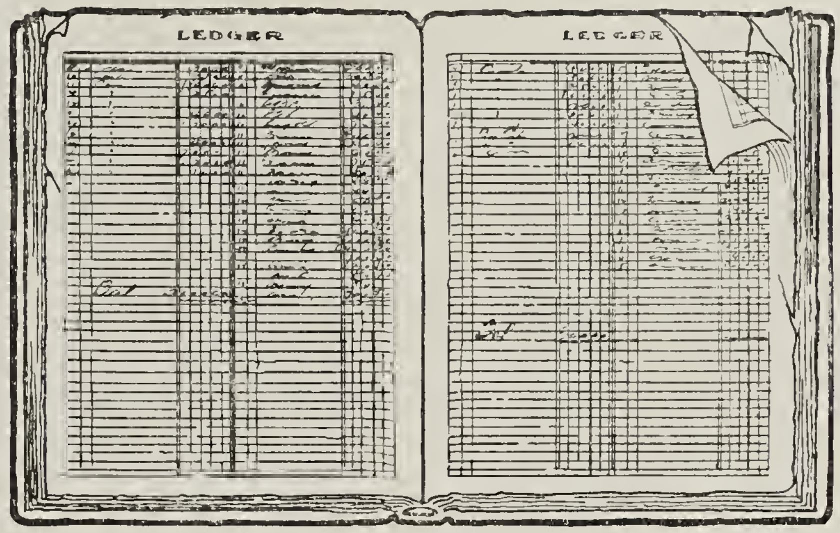

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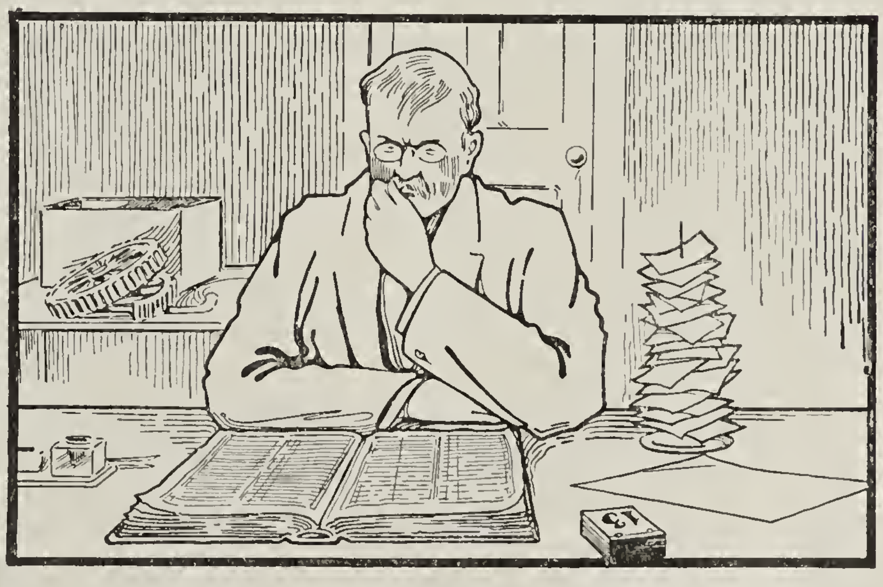


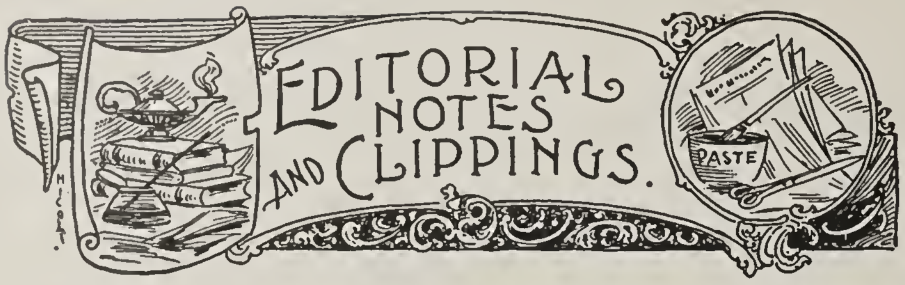
OTHERS

The C. W. RAYMOND CO.

DAYTON, OHIO, U. S. A.

Everything for the Brickmaker

Catalogue for the Asking



EDITORIAL NOTES AND CLIPPINGS.

Sampson & Peterson have in contemplation the erection of a tile factory at Okabena, Minn.

W. O. Bacon, manager of the Greenwood Brick and Tile Company, of Greenwood, Miss., was drowned in the Yazoo river recently.

B. Stevenson, of Verdigree, Neb., has purchased an interest in the Sioux Falls (S. D.) Pressed Brick Company, and will move his family to Sioux Falls.

The Denbeigh Brick Company, Denbeigh, N. D., has been incorporated by Jacob Ohmart, James A. Pendroy and O. B. Jacobson, all of Denbeigh. The capital stock is $100,000.

Frank B. Stratford, for a number of years resident manager of the plant of the Alphonse Custodis Company at Pittsburg, Kansas, has resigned and will return to his former home in New York.

The Junction City Clay Products Company, of Junction City, Ohio, capital stock $60,000, has been incorporated by John H. Kuhlman, J. A. Griggs, George J. Ihrig, Edwin A. Young and J. D. Fowler.

The Hamilton Brick Company, of Chattanooga, Tenn., has filed an application for a charter to engage in the brick business. The incorporators are A. C. Foust, A. H. Rogers, J. E. Foust, J. P. Brown, and F. E. McNichol.

The National Drain Tile Company, Terre Haute, Ind., Samuel C. Cowgill president and James Luther secretary, have filed a notice of an increase of capital stock from $150,000 to $600,000, to be sold in shares at $100 each.

W. B. Halloway, of Boston, and Dr. L. M. Halloway, of Salona, Pa., have purchased five acres of ground near Lock Haven, Pa., on which they will erect a large brick plant. The company will probably be known as the Holloway Brick Company.

The Globe Mineral, Mining and Development Company, of which E. A. Hall, 1002 E. Main street, Louisville, Ky., is treasurer, will establish a plant for the manufacture of paving, fire and face brick, and is in the market for a complete equipment of 100,000 daily capacity.

The plant of the Columbus (Ohio) Pottery Company, south of the town, was almost completely destroyed by fire November 9th, causing a loss of $50,000. The fire started from an overheated kiln and spread rapidly to the main part of the plant before it could be checked. The plant, which was built about two years ago, will be rebuilt at once.

David T. Hammett, superintendent of the Gay Head Brick Company, Pottersville, Mass., died suddenly from heart failure brought on by grip, November 10. He had been engaged in brickmaking all his life, but had only been connected with the Gay Head Brick Company about three years. He leaves a wife and three daughters.

The fire brick plant of W. H. Wynn & Co., at Blue Ball, Pa., near Curwensville, was almost totally destroyed by fire, all that is left being the kilns, carpenter shop and office building. The loss is estimated at $20,000, on which there is about $12,000 insurance. The plant was running to its full capacity and will be rebuilt at once.

Chattanooga, Tenn., is enjoying a season of prosperity, and, as usual, the brickmakers and builders are getting their fair share. Building operations were quite active for the month of October, showing an increase in building permits of $145,975 over the same month of last year. A number of large commercial structures are going up, and work will soon be started on the new Union Depot.

The Clearfield (Pa.) Fire Brick Works No. 2, known as the Bigler Brick Works, of which Frank Connelly is superintendent, will begin at once to greatly increase its capacity. The largely increased business makes this improvement necessary. The purpose is to put up six new fire brick kilns and to increase the length of the yard 150 feet, making it 400 feet by 90 feet when completed, or 4,000 square yards of floor space. This will employ a hundred more men than are now being employed.

Have you read the story of the largest machinery order ever placed? Find it on page 529.

J. P. Mangin is installing a new equipment of 40,000 daily capacity in his plant at Tickfaw, La. He will have the plant ready for operation January 1.

Frand Stead is making preparation to build a new down draft kiln at his plant at Hammond, La., and make a number of other improvements to meet the growing demand for his product.

The plant of the Barr Clay Company, Streator, Ill., was badly damaged by a fire recently which started in the dryer. The greatest loss was the damage to the green brick from the water thrown on the fire.

The Ohio Face Brick Company, of Pittsburg, Pa., has been incorporated with $200,000 capital stock. C. E. Wolff, Pittsburg, E. R. B. Martin, St. Marys, W. Va., F. D. Miller, and J. S. Klinefelter, Alliance, Ohio, and Charles Swisher, of Carleston, W. Va., are interested.

The collapsing of a kiln which was being torn down at the plant of the Interstate Conduit and Brick Company, Scranton, Pa., resulted in the death of one man and serious injury of one other. Mr. George H. Thomas, who was killed, was the chief engineer and was superintending the work.

Kenney Bros., of Russell, Ont., Canada, write that they are putting in a brick plant at that place, and expect to build a continuous kiln which they desire to use in connection with a waste heat dryer, and will be thankful for information in regard to constructing a kiln and dryer of this sort. They will make sand-mold and wire-cut brick.

The Buffalo Forge Company, Buffalo, N. Y., recently closed a contract for heating and ventilating apparatus with the Geophysical Laboratory, Carnegie Institution, Washington, D. C.; the Keystone Watch Company, Philadelphia, Pa.; J. J. Howden Company, Muskegon, Mich.; Hood Furnace and Supply Company, Corning, N. Y., and the Electric Wheel Company, Quincy, Ill.

An early morning blaze November 7th destroyed the brickmaking plant of John Logan, Toronto, Ont. The loss is estimated at $10,000. The fire was discovered about 5 o'clock by the night watchman, but as the plant was in a section of the city where fire protection was poor, the flames had gained such headway before the firemen arrived that they could not be controlled.

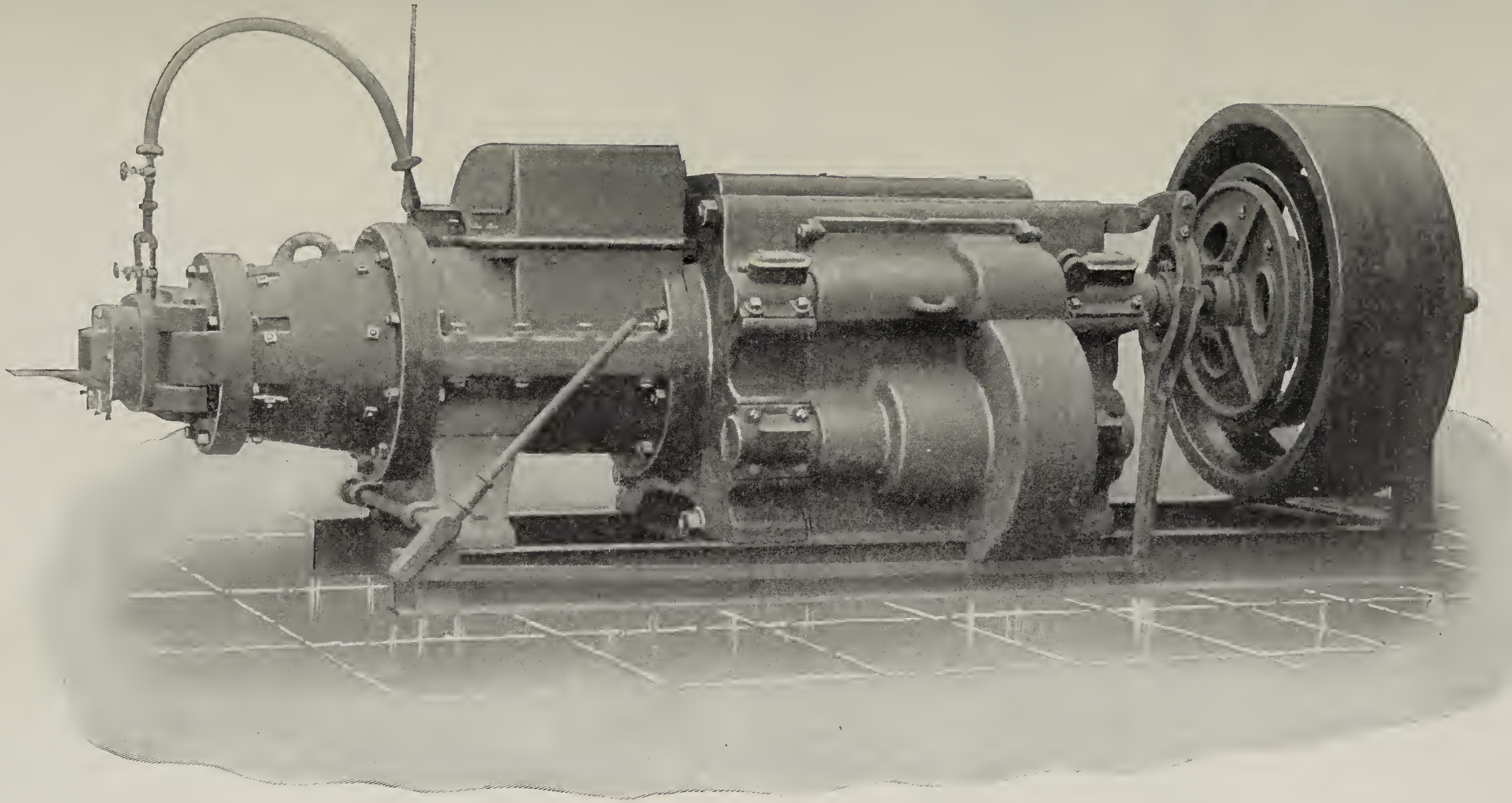
W. S. Purington, general manager of the Purington Paving Brick Company, Galesburg, Ill., writes that in the month of October they shipped 11,316,400 brick, making that the largest of any month in the history of the company. As over half of these brick weighed nine pounds each, it made quite a large tonnage. The plant is running to its full capacity and the prospects are that this condition will prevail throughout most of the winter.

The Buffalo Forge Company, Buffalo, N. Y., write us that they have received a large order for a complete shop equipment to go to Sumatra. There will be fourteen large forges in four different styles or types suitable for the various classes of work to be performed, the majority of it being large, heavy work. All of these forges are to be equipped with the Buffalo down draft smoke exhaust system. The order furthermore includes the necessary blowers and exhausters for furnishing the blast and removing the smoke.

The Columbus Clay Products Company which was recently organized at Columbus, Ohio, with $1,000, will increase its capitalization to $300,000 and will take over the brick and tile plant of the Groveport (Ohio) company, which has been operated for a couple of years by the Central Ohio Roofing Tile and Brick Company. Orders have been heavier than the company could fill and an enlargement of the plant was found to be necessary and the new company was incorporated. The clay which the company uses is of a peculiar quality and makes bricks which find a ready sale in the eastern market. It requires but little stripping and is ready for the mill when it is dug from the ground. Officers of the new company are Professor Joseph H. Bradford, of the Ohio State University, president; Clinton H. Vance, vice-president and treasurer; Millar N. Grant, secretary and general manager. The new

(Continued on page 526.)

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

EDITORIAL NOTES AND CLIPPINGS—Continued.

company takes over the property at once and contracts for the enlarging of the plant will be let within a few weeks.

L. W. Doyle and W. W. Sawyer, of Norfolk, Va., are building a new brick plant ten miles below Norfolk and the N. & S. railroad. The office will be at Norfolk.

The Karr-Nichols brick yard at Columbus, Neb., has shut down until spring. They have turned out over 2,000,000 brick the past season, and only have a small stock on hand.

The drying shed at D. Murtha's brick plant at Philadelphia, Pa., caught fire in the early morning of October 30th, and before the flames were extinguished $3,000 worth of damage had resulted.

The Link-Belt Company has recently opened an office at 913 Missouri Trust Building, St. Louis. Mr. E. C. Berghoeffer, an engineer of long experience with the Chicago house of the company, is in charge.

A charter has been granted to the Carson Brick Company to manufacture brick, terra cotta and tile at Charlotte, N. C. The company is capitalized at $100,000 by John E. Carson, W. C. White and John M. Scott.

The Brooklyn (Ind.) Brick Company has been organized with a capital stock of $50,000, all paid in. The company owns thirty-two acres of shale land, and will at once build a plant of 50,000 daily capacity. The directors are Francis G. Banker, W. R. McKown, C. M. Kirkpatrick and W. H. H. Rock.

The North Iowa Brick and Tile Company is the name of a new concern recently organized to erect a brick and tile plant at Mason City, Iowa. Edward Barr, the well known brick manufacturer of Austin, Minn., is president, George Howland secretary and B. Adams secretary of the company.

The Potlatch Brick Company has been incorporated at Potlatch, Idaho, to manufacture common brick. The incorporators are H. P. Henry, F. C. McGowan and Jos. Ferteling. The capital stock is $10,000. An excellent clay is available near Potlatch and brick will be made to supply the local and district markets.

The Pelican Pressed Brick Company is the name of a new firm that has been organized at New Orleans, La., to manufacture common and pressed brick, terra cotta and other clay products. The company is capitalized at $50,000, and the officers are Robert H. Hackney, president; John A. Wittig, vice president, and H. G. Turner, secretary and treasurer.

The new Carquinez Brick and Tile Company, of San Francisco, which has leased a great tract of land on the bay shore one mile east of Crockett, Cal., from the Eckley estate, is rapidly getting into shape for the commencement of operations which will turn out 100,000 bricks and a good-sized amount of tile every working day. The plant will cost $50,000 and will employ seventy-five men.

The Norfolk Brick Company, recently incorporated with $125,000, will establish a plant at Munden Point, Princess Anne County, Va. The officers of the company are, C. W. Fentress, president; J. T. Lawless, vice president; and John E. Wales, secretary and treasurer. Mr. Fentress is also interested in a company that is to be organized for the manufacture of fence posts and tile shingles.

The Black Dolly Fire Clay Company has been organized at Salt Lake, Utah, and offices for the company have been opened in the Walker Building. The company owns four large clay deposits near Pleasant Grove and has an immense body of fire clay. A tunnel has been cut across the vein for eighty-five feet without yet discovering the width of the vein. The company has already secured orders from the local smelters and also for a smelter in California. Those interested in the company are H. A. Cole and Israel Cole, of Pleasant Grove, F. A. Cole, of Sandy, and H. S. Harper, of Salt Lake City.

The Western Terra Cotta Company has purchased a site at Kansas City, Mo., on which they will erect a large plant for the manufacture of terra cotta. The plant will be constructed throughout with modern machinery and the product will be burned with natural gas. The company was incorporated with $24,000 capital, all paid in. The officers are Wm. Timmerman, president; Paul C. Baltz, vice-president and general manager, and A. Wiegers, secretary. Both Mr. Timmerman and Mr. Balz have had years of experience in the manufacture of terra cotta. The company started right by sending in their subscription to the CLAY-WORKER almost as soon as organized.

The W. C. Harrison Brick Company, Auburn, Wyo., advise us that they are in the market for soft mud and dry press brick machinery.

Thomas Wright is at the head of a movement to establish a large terra cotta and brick plant in Manitoba. Their headquarters of the company will be at Winnipeg, Canada.

Phineas Arnold, of Canal Dover, Ohio. a pioneer clay product manufacturer of that section, died at his home November 8th. He had been a resident of Canal Dover since 1874.

That the Stevenson Company's machinery is the best made is proven by the fact that one of the largest concerns in the world will turn down that made at home and buy Stevenson's. See page 529.

L. F. Beers has recently taken charge of the Detroit office of the Buffalo Forge Company, succeeding H. M. Brightman, who is now connected with the Terry Engineering and Construction Company, of Grand Rapids.

The Englewood Tile and Brick Company, of Paulding County, Ohio, was recently incorporated at Columbus, Ohio, with $10,000 capital stock, by W. H. Knoke, Jason A. Law, F. L. Hay, W. R. Worman and Dan Ayers.

The Adam Weber Sons fire brick manufacturing plant at Weber and New Brunswick, N. J., has been sold to Didier-March Company for $230,000. This is one of the biggest manufacturing plants of its kind in that section.

The Missouri Slope Brick and Tile Company has been organized and will erect an immense plant near Dickinson, N. D. A number of prominent men of that section are interested in the enterprise, which bids fair to be an important factor in the commercial upbuilding of the Missouri slope.

The Woodbury Brick Manufacturing and Building Company, capital $250,000, has filed articles of incorporation in the Camden, N. J., County Clerk's office. The incorporators are Charles B. Gunn, of Mt. Royal, N. J.; Joseph T. Sickler, of Clarksboro, N. J., and Melvin M. Garrison, of Camden, N. J.

The Fremont Pressed Brick Company, of Fremont, Ohio, has been sued for $10,500 by the Anderson Foundry and Machine Company and the American Sand Lime Brick Company. The suit has been brought for the alleged failure to fulfil a contract.

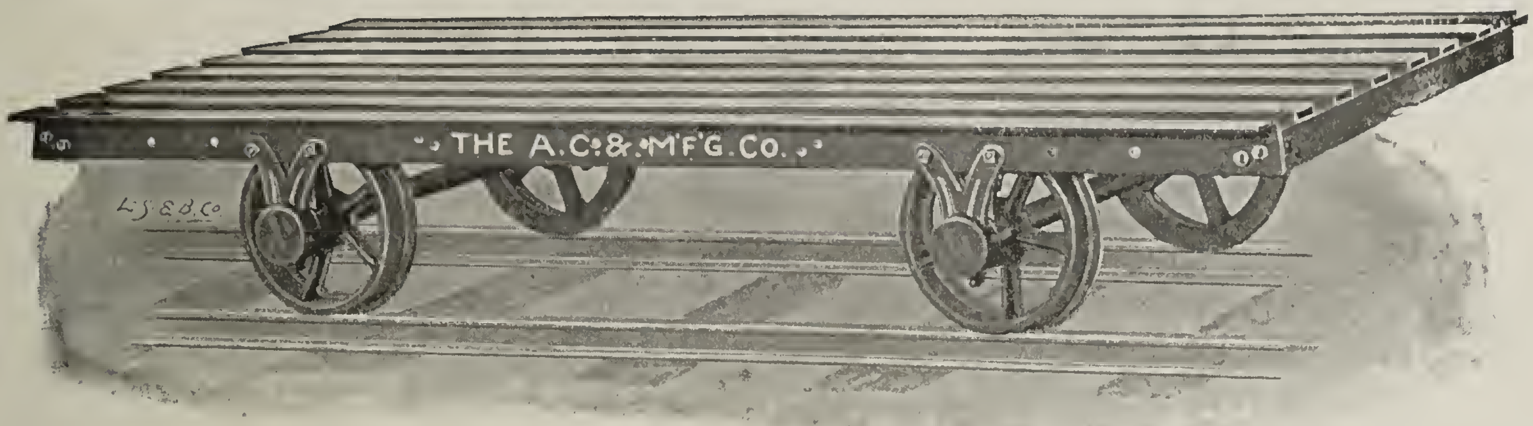
The new works of the American Sewer Pipe Company, which are being erected at East End, East Liverpool, O., are progressing favorably, and from present indications it looks as though the plant would be ready for operations within the next few months, by spring, at least.

The first kiln of the tile was drawn Monday, November 12, at the new plant of the Kenilworth Tile Company, at Newell, W. Va. Every tile was perfect. The product of the plant is confined to tiles of mission effect. The quaint production of the plant is sold far ahead into next year.

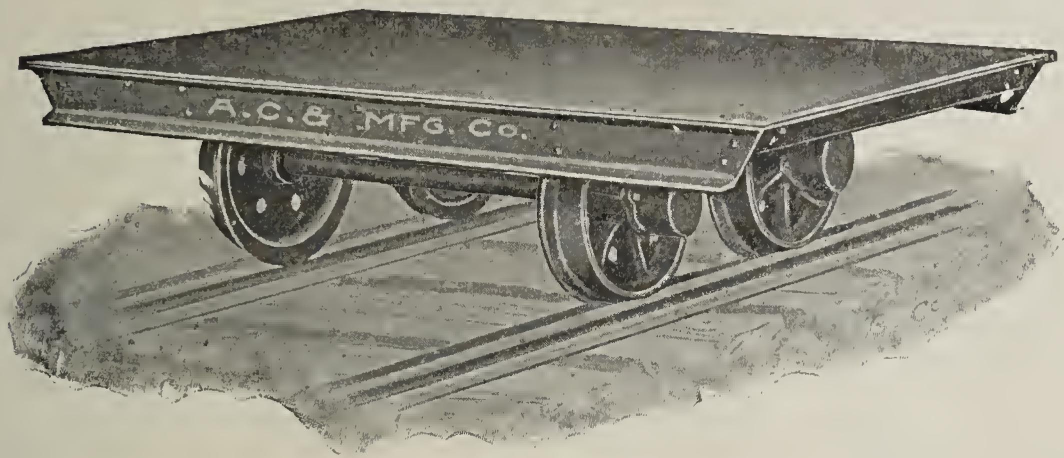
At the fair recently held at Augusta, Ga., by the Georgia-Carolina Fair Association, the small pottery in operation there was a great feature. The machinery, which was all in miniature, was furnished by the Patterson Foundry and Machine Company, of East Liverpool, Ohio. The exhibit was one of the leading features of the fair.

The plant of the South Side Pottery Company, at Parkersburg, W. Va., has been dismantled and the machinery and everything in the way of molds, etc., sold to the Robinson Clay Products Company, of Akron, Ohio. The plant was never a success and run at a loss while in operation. It has remained idle for some time prior to the sale.

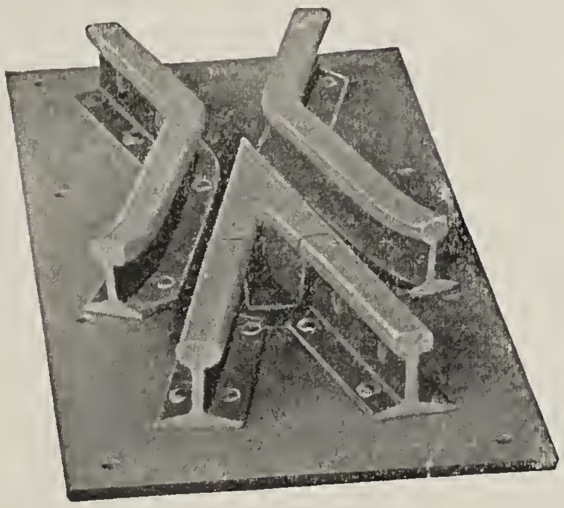
Toledo, Ohio, seems to be in line for a new hollow brick and tile plant. Charles Cook, who resides at 824 Erie street, owns 40 acres of the most valuable clay deposit to be found in this section. The property is located near the head of New York avenue, and is crossed by the Toledo Railway and Terminal Company's belt line, which encircles the city. Mr. Cook has had samples of the deposit made into bricks. The clay is of the fire variety, and has been analyzed by the State Chemist at Columbus, the sample testing 71 per cent. If the plans "come to a head," a modern plant for the manufacture of hollow brick, tile and fire clay specialties, to cost somewhere between $50,000 and $60,000, will be erected. Mr. Cook is not new to the brick business, having previously held an interest in a pressed brick plant at Bradner, Pa., and at present is a stockholder in a local brick plant.


THE A.C.&.M'F'G.CO.

No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



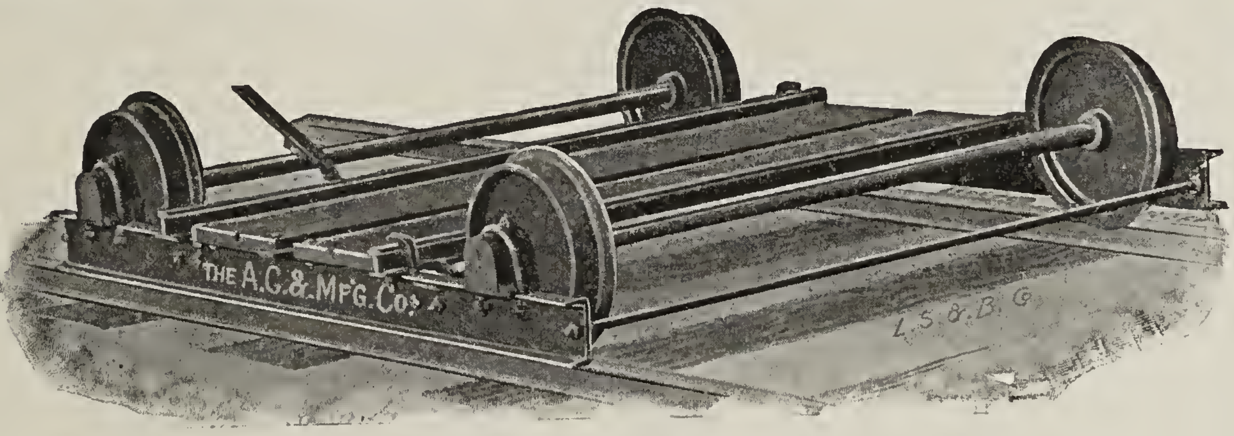
No. 1025. Steel Frog.

The Atlas Car & Mfg. Co.,

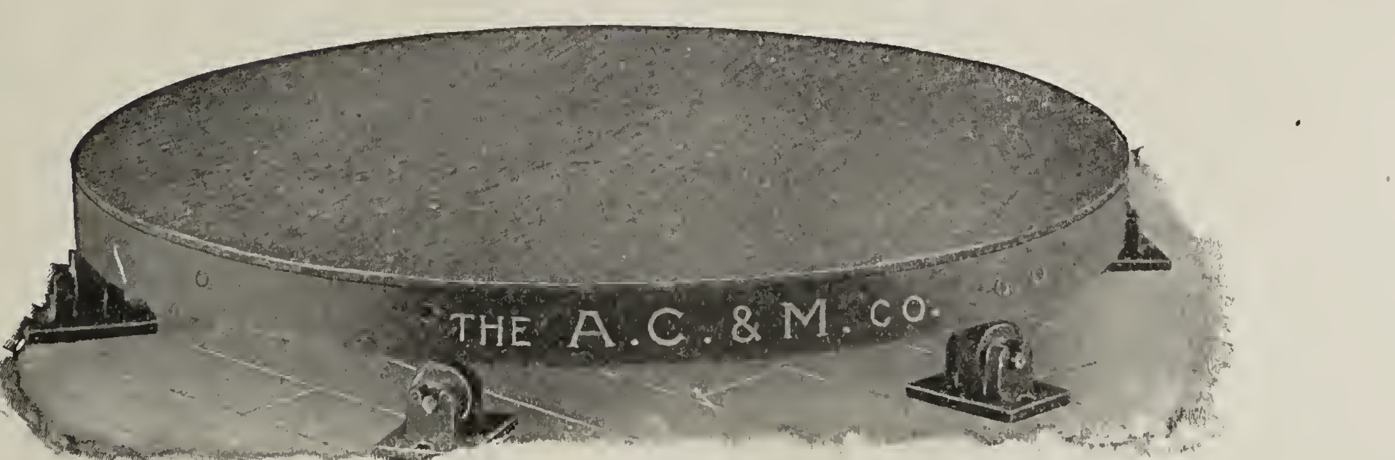
CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc. Also Transfer Cars, Turntables, Clay and Dump Cars.

No. A. Flanged Pallet.


THE A.C.&.MFG.Co.

No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for The Clay-Worker.

NEW YORK AND THE EAST.

MOST OF THE brickyards in the vicinity of New York are burning probably the last brick for this fall. While at this writing the weather is mild and there has been scarcely a freeze of any consequence it is unlikely that the desirable conditions can prevail much longer, and it is probable that before long the clay will be frozen and makers will have to cease business. The last burns have sold practically as well as the first. The market has continued good up to the very close of the season. Buyers have been ready to pay a good price for the stock and are still ready to pay all makers ask. The large building and engineering operations of a public and semi-public character have combined to make the demand the largest and most active ever known. It seems probable that the spring will open substantially as active and with prices quite as good as they are at the close this fall.

Along the Hudson the yards are busy cleaning up for the season. One of the most prominent manufacturers said a few days ago that the season of 1906 had been the best his firm ever knew and that he was in position to say that the outlook is quite as good. The building projects now under consideration indicate that demand will be active and that sales will be made at quite as high prices next year as they have been this year. The situation is quite as encouraging as it ever was. Contracts already let and those under consideration will be large and profitable. Brickmakers will benefit largely by the probable increase in building operations. Nearly all yards along the Hudson have made and sold their full complement this season. Some have run ahead of their regular output. The market has been so active and prices have been so good that the makers have pushed their production harder and have succeeded in increasing the output. Considerable improvements will be made before next season opens, though there is nothing definite known yet as to what they will be. Probably new machinery will be added or old machinery will be replaced in yards where it has worn out. Some buildings will be reconstructed and others will be erected. And so on through the list. It looks very promising and during the winter preparations will be made for a more extensive and profitable business than ever before.

The Hackensack yards are all closing up their work for the year. Most of them have their last burning in and the fires are being watched more closely than usual to rush the work through. The quantity made along the Hackensack has been larger than usual, but there is no surplus. Most yards are vacant and only the burning that is in the sheds now is left. Just what will be done about stock for the early spring demand has not been determined. It looks as though it would be short and that high prices will prevail. Nearly all the Hackensack yards are profiting largely by the increased and apparently permanent demand for brick. The market is in splendid condition at the close and sales have been made at full figures recently, even though winter is closing in and cold and snow will soon be here.

The market for brick in and about New York has continued active. Sales have been made at full outside figures during the past few weeks and toward the close there has been an upward tendency and higher prices have been asked by some holders, though it is not certain that they have been paid. Prices are as follows: Front buffs, No. 1, $32.00; grays, shaded and specked, $32.00; white, No. 1, $32.00; Hudson river, common, $6.00 to $6.50; light hard, $5.00 to $5.50; pale, $4.00 to $4.50; No. 1, fire American, $25.00; No. 2, fire American, $20.00; Scotch, $35.00.

From Boston come reports of fair business, with prices ruling firm. An advance in prices before very long is thought probable by well-informed observers. Not much more making will be done this season and the brick now on hand will have to do for the remainder of this season and the opening of next. With the supply as short as it is now, the market seems very likely to advance rather than otherwise, perhaps before the close of this season. Prices are as follows: Up and Down s. s. brick, f. o. b. yards in New Hampshire or Massachusetts, $7.50 to $8.00; Up and Down w. s., $9.00 to $9.50; New Hampshire selected w. s., f. o. b. cars New Hampshire, $12.00.

A fair business is being done in drain pipe, but the bulk of it is over for the season. Prices are no longer fixed. The best customers expect a discount of 75 per cent. Smaller buyers are held down to 70 per cent., while retailers are allowed a limit of 88 per cent. Sales will not be especially large during the remainder of the fall. The bulk of the sales of this variety of clay goods come in the spring.

In tiling, prices are difficult to quote accurately. There are some variations for different reasons, though possibly the variable prices are more apparent than real. The prices given below are about what would be asked the average buyer for relatively liberal quantities. The quotations are for car lots: Partition tiles, two inches, 4½ cents per square foot; four inches, 6½ cents; six inches, 9 cents; hall furrings, two inches, 3¾ cents; three inches, 4½ cents; roofing blocks, three inches, 6½ cents; floor arches, fifteen inches, 19 cents; twelve inches, 15 cents; ten inches, 12 cents; nine inches, 10 cents; eight inches, 9 cents; six inches, 8 cents.

The question of paving in New York is interesting, and it is likely that there will be more brick laid during the year to come than was ever laid before. The fact that New York officials accepted preserved wood had some influence in determining them not to adopt brick, excepting where it had already been laid. Now they have ceased laying wood and are putting down granite blocks again on some streets. This course is not explained, but it is understood to be due to the machinations of certain politicians who may or may not be interested in the granite paving quarries. Brick ought to be more extensively used than it is, but it is slow work to make officials see its value. Or, perhaps, they won't see it. There is sometimes an official blindness which prevents these people from seeing anything that is of permanent benefit.

Burton.

MARION STEAM SHOVELS FOR THE MESABE RANGE.

The immensity of the mining operations in the Mesabe range of Minnesota is beyond the ken of those of us who have not been face to face with the work going on there. The iron mining districts of that State furnish two-thirds of the iron ore mined in the United States, and we produce more iron annually than any other nation on the globe. It is claimed that St. Louis County, Minnesota, is the mainstay of the steel industry. Strange to say, the ore in the crude state is handled with steam shovels, and the manufacturers of steam shovels have found there a great market for their ponderous mechanical diggers. A year ago the Marion Steam Shovel Company supplied twenty of their extra heavy steam shovels, which are built for strength, a very essential element in that work. That they fill the bill is evidenced by their having lately received an order from the Oliver Iron Mining Company for twenty-nine shovels, which are to be delivered during the months of January, February, March and April. The Marion Steam Shovel Company regard this order as a high testimonial of the merits of their shovels. They are now shipping from thirty-five to forty machines per month, and hope in the next sixty days to materially increase their output.

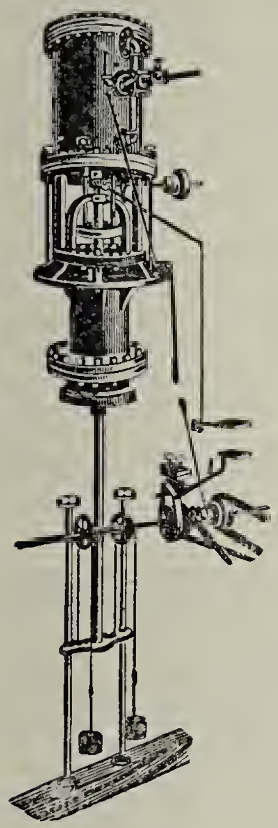
The Robinson Clay Product Company, of Akron, Ohio, one of the largest corporations in the world, tells where they have found the best machinery for their purpose in the world, on page 529. This is expert testimony.

BIGGEST SINGLE ORDER

For Clayworking Machinery EVER PLACED
in Uncle Sam's domains, has gone to

THE STEVENSON CO.,

of Wellsville, Ohio.



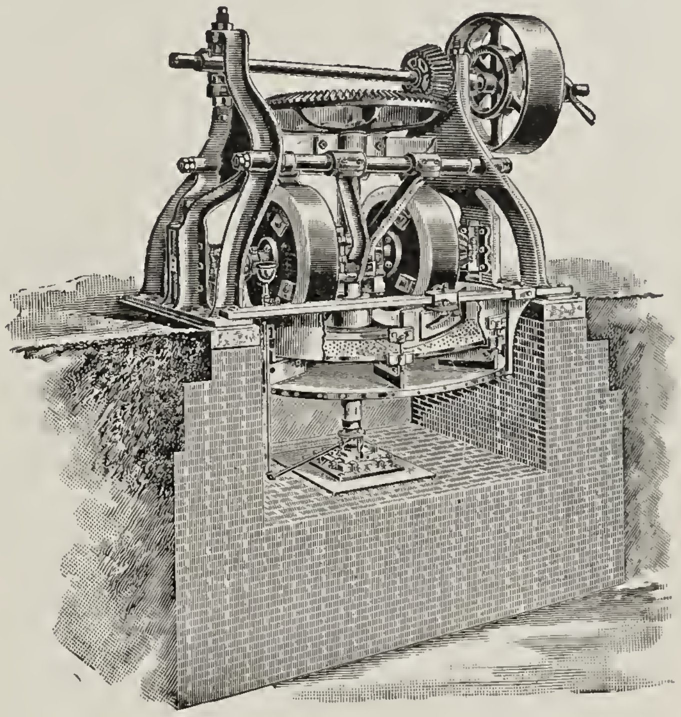
This mammoth order was placed by

The Robinson Clay Product Co.

Of Akron, Ohio,

one of the giant sewer pipe corporations of the world, after a keen inspection of a number of plants recently erected by the Stevenson Co., which convinced them beyond a doubt that Stevenson's machinery is the most speedy and perfect in the world, and no progressive company can afford to be without it.

The judgment of such a company is entitled to the greatest weight with other manufacturers, actual or prospective. Here is their order:



THE ROBINSON CLAY PRODUCT CO.
Akron, Ohio.
John J. Starr, Secretary.

October 30th, 1906.

The Stevenson Company, Wellsville Ohio.

Gentlemen—As per your proposition of the 27th, quoting us on sewer pipe machinery, you may enter our order for the following:

4-9 Ft. Improved Iron Frame Dry Pans
10-8 Ft. Improved Iron Frame Wet Pans
1-44 x 60 x 21" Sewer Pipe Press
4-40 x 52 x 20" Sewer Pipe Presses
2 Sets of Socket Dies from 2" up to 24"
7 Clay Carriers and Feeders
Delivery--sixty and ninety days
Terms--as specified in proposition.

Yours truly,
THE ROBINSON CLAY PRODUCT CO.,
John J. Starr, Sec.

Written for The Clay-Worker.

DETROIT BRICK AND BUILDING NEWS.

THE BRICK BUSINESS of Detroit has shown unusual activity for the past month; in fact, brickmakers all agree that this will be the banner brickmaking year, not only for Detroit but for all of Michigan as well. All of the brick yards in Detroit are very busy and brickmakers have about all the orders they can fill and are not looking for outside trade.

This great activity is naturally due to heavy building operations in this vicinity. Never before has the city of Detroit had such a building boom as it is now enjoying. The fact that over four hundred building permits for houses alone are being issued every month shows the great prosperity the city is enjoying, for it is pretty well established that if home building is heavy, factory and office building will also be heavy. In the State, activities have not been so strenuous, for, in many cities, building operations have fallen off to a great extent. Outside of Detroit, the cities of Grand Rapids and Kalamazoo have shown the steadiest increase in building growth.

During the month of October all records were broken in the building line in Detroit. In the twenty-eight working days of the month new buildings were announced and permits issued to the amount of $1,516,800 in valuation. This is more than double the total valuation in October, 1904, and shows the wonderful building growth of the city. The year 1905 broke all building records, but in the ten months just ended the record of the whole twelve months in 1905 is broken, and the actual gain in building business for the ten months over the same period of the year before is $2,191,300.

The month of November, so far, however, is showing a sight let-up in the manufacture and demand for brick. This is to be expected, though, for this time of the year.

Interesting statistics recently issued by the geological survey show that Michigan stands twenty-fifth in the production of brick and tile, with a total value of $1,765,707 for the year 1905. This is an increase of about $200,000 over 1904. In the manufacture of common brick Michigan stands sixteenth in the States, with a total manufacture of over 211,000,000. In the matter of price Michigan stands next to the lowest, with an average price of $5.45, Georgia being the lowest with an average price of $5.24.

With the market so active as it now is, the fact that brick are being sold at such a low price in Detroit and Michigan is causing much unfavorable comment. While there has been no actual concerted effort to maintain prices, many dealers and manufacturers are nevertheless in favor of such an effort and believe something should be done.

"Detroit brickmakers should maintain better prices," declares W. T. Walker, manager of the Springwells Brick Company. "This is not due so much to the fact that brick are in demand, but because other prices and costs have advanced. Teamsters want more money, and are getting it; in fact, every branch of labor touching the brick industry has advanced. Furthermore, we have trouble in getting the proper cars; we can never get the largest ones. In view of these circumstances, prices should by all means be kept up. I believe the cutting of prices in this market is worse than anywhere else. In fact, I have made it a rule never to quote prices over the telephone, unless I know absolutely to whom I am talking. The demand for brick is all that we could ask. We have cut off our outside business entirely and have all we can do to attend to Detroit orders."

While the demand for brick remains good, it is principally the cheaper grades that are being sold. Some of the local shippers and manufacturers are complaining on that score, because the demand for ornamental and high grade brick is not what it should be. Car shortage, now experienced on all the railroads, is also another cause for complaint.

Naturally, the subject of concrete construction and cement brick has been much discussed in Detroit. While there are several cement brick concerns in the city, they have not made any inroads into the demand for brick in this section.

Over three million brick will be used in the construction of the Ford Building, Detroit's largest skyscraper. This building, now in course of erection, will be eighteen stories high. The front of the structure, facing Griswold street, and the side, facing Congress street, will be terra cotta finish. The rear and side facing an alley will be of white enamel brick. contracts have already been let for the ordinary brick. The Lonyo Brick Company, of Detroit, it is stated, have received this order. The letting of contracts for the outside brick and terra cotta will be decided shortly by the architects, Burnham & Co., of Chicago. F. H. Goddard, of Detroit, is the contractor in charge of the work. The building, when completed, will cost about $1,500,000.

Detroit brick men are offering considerable criticism at present relative to the issuing of building permits and it is possible that a stricter code of building laws will soon be enforced. Many permits are being taken out by unscrupulous contractors and owners long after the work has been started, and this naturally causes much dissatisfaction.

One of the new brick dealers in Detroit is the firm of Samuel J. Vail & Co., 805 Hammond Building. This company, while doing practically a jobbing business, handles the Brazil Clay Company's products, of Brazil, Ind., in this territory, and reports a growing demand for this line. Mr. Vail was formerly with the Whitehall Portland Cement Company, of Philadelphia, Pa.

The Northeastern Terra Cotta Company, of Bradford, Pa., represented by Frederic B. Stevens in Detroit, has secured the contract for the terra cotta on the new Home Telephone Company Building to be erected in Detroit. This building will cost over $100,000. The Northeastern Terra Cotta Company is a comparatively new firm, and the contract just secured in Detroit is highly pleasing.

The Wolf Brick Company, of Detroit, has not been operating its plant for some time, due, it is said, to labor troubles. It is claimed that lower wages are not acceptable to the men and that, for this reason, they have refused to work for the Wolf Company. The fact that the company has not been operating has caused considerable comment among brick men in Detroit and the situation is watched with interest.

D. E. T.

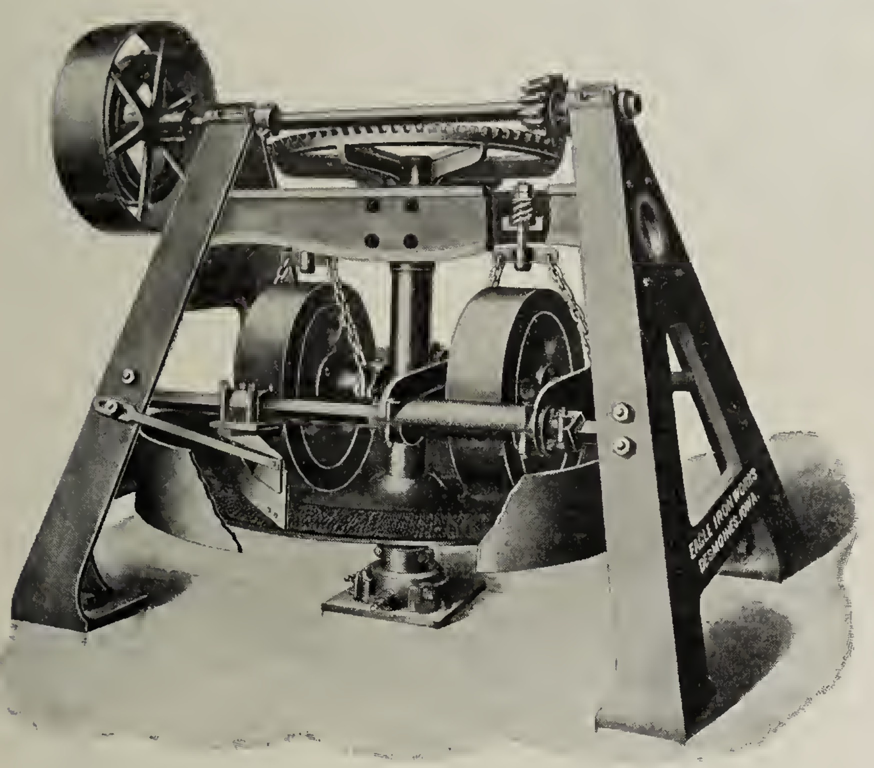
PARENTAL ADMIRATION.

Lady—"Ah, what a nice large healthy baby!"

Girl—"Yes'em. Pop t'inks as much of dat baby as if he was a bird dog."—Judge.

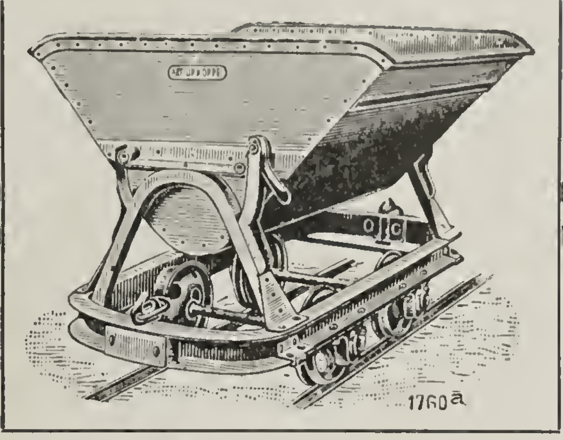
Independent and Suspended Mullers

the distinguishing feature of our **DRY PANS.**



Other valuable features which our catalogue fully describes.

EAGLE IRON WORKS,
Des Moines, Iowa.



PORTABLE TRACK AND CARS

FOR ALL KINDS AND CONDITIONS OF INDUSTRIAL SERVICE.

Ready for Prompt Delivery

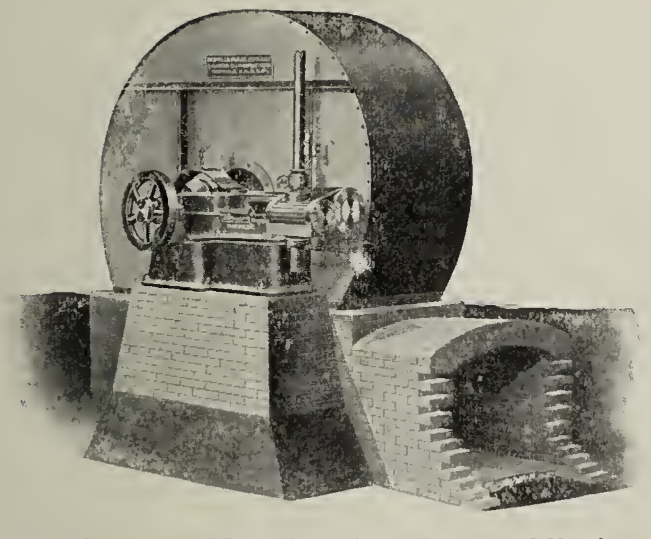
Rails, Steel Ties, Portable Track, Switches, Frogs, Turntables, Wheels, Axles, Dryer and Steel Dump Cars.

Write Dept. 3 for Catalog "C."

ARTHUR
KOPPEL
COMPANY

66-68 Broad St., NEW YORK
618 Monadnock Blk. CHICAGO

BUFFALO WASTE HEAT DRYER.



"Buffalo" Waste Heat Fan Direct Connected Engine
Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

"BUFFALO" WASTE HEAT FANS take the WASTE HEAT from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "BUFFALO" FANS have water-cooled bearings where necessary.

APPLICABLE TO BRICK, TILE AND TERRA COTTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

Written for The Clay-Worker.

ST. LOUIS BRICK AND BUILDING SITUATION.

BUSINESS HAS been booming with the brick manufacturers for some time and they have about all they can attend to to keep their patrons supplied with their products. This big boom has been caused by the building boom that has existed in St. Louis for many months.

The boom has been augmented the last few weeks by several big building propositions, one of them being to erect a splendid auditorium and coliseum on the corner of Jefferson and Washington avenues.

Public spirited citizens, seeing the absolute necessity for a structure like the present old coliseum building, which is to be torn down during the present month, have organized a strong syndicate and have selected a splendid site in the old Uhrig's Cave property at Jefferson and Washington avenues.

The coliseum will be a suitable building where local and national conventions can be held, as well as horse shows and public meetings of every character. For many years St. Louis was known as the City of Conventions and it is highly essential that this building enterprise should be encouraged.

The building in the down-town district, which must be extended to Eighteenth Street, has, of course, materially assisted in the splendid record for the year. Builders of the four-family flat buildings and the moderate dwellings have been very successful in disposing of their holdings as soon as completed.

The feature that has been disturbing the builders lately was the temporary stringency in the local money market, money having tightened up considerably in the last few weeks. It is expected that this condition will be improved after the first of the year.

Another big increase in the amount of building was shown by the permits issued during the month of October. The total value of buildings for which permits were taken out is $2.853,976, compared to $1,596,383, for the month of October, 1905. The gain is $1,267,593. The number of permits issued was 853 for October, 1906, and 782 for October, 1905. Comparative statements of the business transacted by the building department is as follows:

	Oct. 1905.	Oct. 1906.
Brick Buildings—		
New brick, permits	189	235
New brick, estimated cost	$1,376,027	$2,609,382
Old brick, permits	127	107
Old brick, estimated cost	$128,006	$119,305
Frame Buildings—		
New frame, permits	388	414
New frame, estimated cost	$80,741	$107,736
Old frame, permits	78	97
Old frame, estimated cost	$11,609	$17,553
Brick and frame, estimated cost	139,615	136,858
Totals	$1,596,383	$2,353,976

St. Louis is suffering from a scarcity of labor. All over the city, in almost every branch of trade, the demand for both skilled and unskilled labor greatly exceeds the supply.

There is a large demand for building laborers, as well as skilled workmen. The unskilled men or laborers, are used in excavating and preparing the way for the erection of buildings. There is also a great scarcity of skilled workmen. During the long labor war between the bricklayers and the building trades council last spring many workmen left the city and found employment in other places. Many men were sent out by their unions, it is claimed, and so after the strike was settled in June, and with the large amount of labor needed during the summer, as it was estimated that fifty per cent. more building was done in St. Louis than in any previous year, there has been a great demand for men.

Bricklayers are about the only class of workmen who are plentiful, and they were secured by contractors early in the season, when it was found the supply of labor was too small for the amount of work required this summer. The formation of several independent unions and the disorganized union conditions of the early part of the summer did much to relieve the pressure, but the amount of building was such that the demand has always greatly exceeded the supply of men.

Robert Van Zant, for half a century a resident of this city, and long an employe of the American Brick Company, died a couple of weeks ago. Mr. Van Zant was seventy years old and his death is attributed to senility. He was a civil war veteran, having served in the Union army. He left a wife and two children.

E. G. Lewis, of University City, a suburb of St. Louis, is preparing to start a small plant in which to work up a fine grade of porcelain clay, discovered only a few feet from the surface of the ground near his home. He says he has worked up some of the clay in his chicken house, which he has converted into pottery and secured several pieces of art pottery which rank well with the best product of potteries in the United States. The deposit of clay was discovered when a sewer was being dug through University Heights during the world's fair. The deposit is thin and would not supply a factory for manufacturing the commoner pieces of earthenware, but Mr. Lewis intends to use it only for making pieces of the higher order of workmanship.

A tract embracing 4.92 acres was recently transferred from John Dell, president of the Missouri Fire Brick Company, to the company for $24,785. The property is on the east side of the Taylor City belt line. A Saint.

Defy Competition

The Ideal Concrete Machine for the manufacture of Concrete Building Blocks makes it possible to profitably undersell all other building material in all localities.

Ideal Blocks can be sold far below the cost of brick, lumber or natural stone. Excel them all in durability and fire and weather proof qualities. Adaptable to any possible architectural design.

IDEAL CONCRETE MACHINERY

Wonderfully simple in construction. No chains, springs or gears. Embody the only principle (face down) permitting the practical use of rich facing material with less expensive material in back of blocks. Adaptable to any size block within capacity.

The same machine makes blocks in countless ornamental designs and natural stone effects.

Write and learn how easily, rapidly and profitably ONE MAN can turn out Concrete Building Blocks with an Ideal machine.

Ideal Concrete Machinery Co.,
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Indiana.

W. H. C. MUSSEN & CO., Montreal, Can., Sole Agents for Canada.

THE CLAY-WORKER

The Official Organ of the National Brick Manufacturers' Association of the United States of America.

Vol. XLVI. INDIANAPOLIS, IND., DECEMBER, 1906. No. 6.

Written for The Clay-Worker.

INFLUENCE OF BRICK IN MODERN ARCHITECTURE.

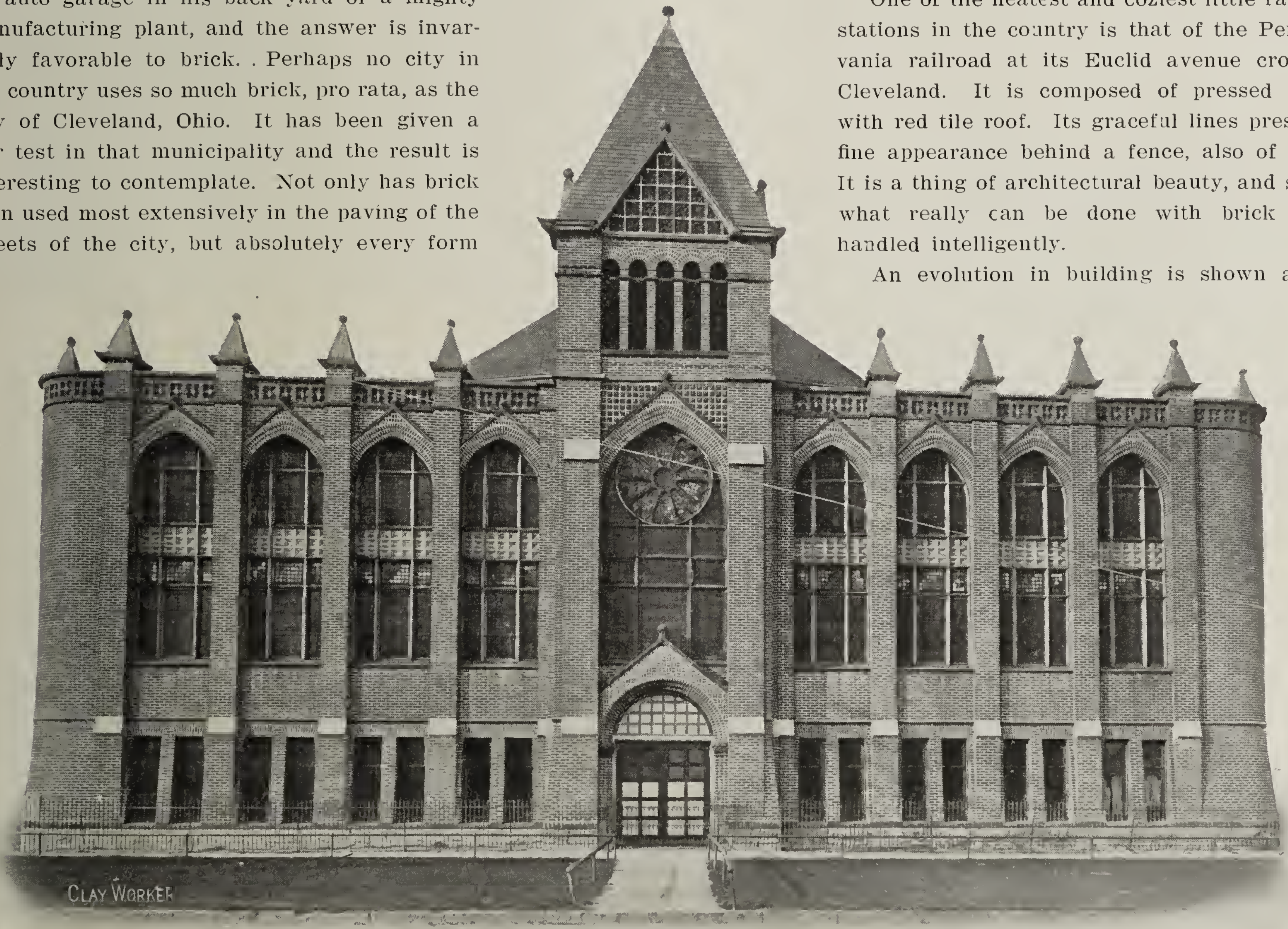
WHAT PART does brick play in modern architecture? Does it fill the requirements of a material suited to varied uses? Is it substantial? Is it ornamental? Is it reasonable in price? Does it withstand the corroding influence of the elements? Is there any other material which can be substituted for brick in modern building and prove as satisfactory?

These and many other questions are involved in the consideration of a topic which is vital to every builder, whether he be constructing a cottage, a costly mansion, an auto garage in his back yard or a mighty manufacturing plant, and the answer is invariably favorable to brick. . Perhaps no city in the country uses so much brick, pro rata, as the city of Cleveland, Ohio. It has been given a fair test in that municipality and the result is interesting to contemplate. Not only has brick been used most extensively in the paving of the streets of the city, but absolutely every form of structure can be found there constructed of the old reliable building material—brick. Factories, hotels, residences, libraries, railroad depots, office buildings, colleges, even fine large churches, are constructed of brick.

Herewith is shown a photograph of a church building in Cleveland which is on a more pretentious scale than usual, even when such structures are constructed of brick. It goes to show, however, just what can be done with the material when artistically handled and should serve as a model for similar buildings. This church building is modern in every respect. The Sunday school is situated in the basement and the auditorium, seating about 1,000 persons, is above. It was built at a minimum cost and much cheaper than it could have been constructed of stone.

One of the neatest and coziest little railroad stations in the country is that of the Pennsylvania railroad at its Euclid avenue crossing, Cleveland. It is composed of pressed brick, with red tile roof. Its graceful lines present a fine appearance behind a fence, also of brick. It is a thing of architectural beauty, and shows what really can be done with brick when handled intelligently.

An evolution in building is shown at the



North Presbyterian Church, Superior Ave. and East Fortieth Street, Cleveland, Ohio.

Case School of Applied Science, which is probably as well known for the clever engineers it turns out as any institution in the country. The original building is of stone—a tall, frowning structure which lacks attractiveness, and when it came to enlarging the college's facilities, brick was chosen to build with. The new electrical and mechanical laboratory, one of a number of buildings recently added, is of pressed brick and makes a most satisfactory appearance in its setting.

Influenced partly by the munificent gifts of Andrew Carnegie there has been a general awakening to the need of new library buildings. There seemed a need for something permanent as well as graceful and in many instances stone has been used. A branch library just finished in Cleveland shows what can be done with brick when a library building is needed.

Euclid Ave. Railway Station Surrounded by Brick Fence.

Cleveland has recently added to its public structures an art museum. Brick, with stone trimmings, came out victorious in the selection of material for this structure. Built on simple, classic lines, it shows again the architectural possibilities of brick.

The six largest office buildings in Cleveland—comprising the main skyscrapers—are all built of brick. They are the Williamson, Rockefeller, Schofield, Rose, American Trust and Citizen's Trust buildings.

Practically all modern schools are constructed of brick. One example of an exceedingly substantial style is shown in the University school, which in some respects is constructed along the lines of the church shown. It is a most pleasing structure in one of the fashionable parts of the city.

With the fad for concrete construction it is refreshing to notice that the White Automobile and Sewing Machine Company, after careful consideration, decided to build their new factory, covering several acres of ground, out of brick. It is one story high and is noteworthy for its being well lighted and finely ventilated. It has just been completed.

Brick has proven its worth because it has shown its adaptability to every need in structural work. It is cheap, because any kind of brick can be bought to suit the buyer's pocketbook. It withstands the deteriorating influences of any climate. It makes a dry, warm building. It is easy to handle by the builder. Brick is made almost everywhere and is therefore easily obtainable. That it is ornamental scarcely no one needs convincing. That it is substantial everyone admits—even the concrete structural builder who uses it for strengthening up his pillars and facing his walls. For lofty buildings nothing suits like brick, either in respect to ornamental possibilities or lightness and strength. For low structures it is equally adaptable.

The day may come when wood will be held at so high a premium that it will not be feasible to use it for anything but finishing purposes, but the time will never arrive when good brick cannot be procured. If anything, the art of making bricks is likely to advance to such a state that the forests of this country can be spared the ignominy of being cut to protect the heads of the rapidly increasing population. The wise builders and architects, when considering architectural possibilities, cannot afford to ignore the many points of merit of good building brick.

FIREPROOFING CONCRETE.

AFTER HAVING been heralded so loudly by its persistent champions as a panacea for all structural and fire resistive woes, it is rather amusing to see the propositions bravely put forth that reinforced concrete should be protected against fire, and especially that the fireproof material selected should be terra cotta. Capt. John S. Sewell is quoted in one of the recent architectural publications as advising that reinforced concrete should be treated as structural material, superior in many respects to steel, but one demanding protection from fire. The logical line of development is reinforced concrete covered with terra cotta. He suggests using terra cotta in place of a good deal of the wooden centering, which becomes such a serious item of expense in the execution of reinforced concrete. We heartily concur with what he suggests. Our experience has shown repeatedly that concrete was never intended to successfully resist excessive heat, and its structural value is apt to be ruined by even an ordinary fire, although it may last sufficiently to protect the steel within it. But if we are to cover our reinforced concrete with terra cotta why not go back to first principles, omit the concrete entirely and revert to steel beams and columns, which can be tested and examined in every detail before they are used, and protect them with the only material which can successfully pass a severe fire, namely, porous terra cotta.

Miles Park Branch Library, Cleveland.

A recent issue of one of the popular magazines presented a very optimistic picture of the future of concrete and quoted the wail of one of the trades unions, to the effect that unless something was done immediately to stop the rapid development of concrete, the poor bricklayers would be out of a job and would be driven to starvation. We believe they need have no apprehension on this score. Good concrete has come to stay and is getting better and more usable every year. Its flexibility, the speed with which it can be put in place and its absolute strength recommend it as a substitute for many materials. It will, we believe, very largely displace wood in the not far distant future. It will also serve as an inexpensive substitute for many forms of stone, but we cannot see any evidence that it is at all likely to supplant burned clay.—The Brick Builder.

Written for The Clay-Worker.

FIRE IN OUR "SKYSCRAPERS."

By F. W. Fitzpatrick.

THE PROJECTED forty-two story Singer Building in New York, the erection of so many tall buildings in all our cities (and after all the most profitable improvement one can make upon expensive city property), taken in conjunction with what has been seen was the result of fire in the so-called fireproof buildings of Baltimore and of San Francisco, prompt many of our most thoughtful popular as well as technical journals to speculate upon the significance of the term "fireproof" and to express some solicitude for the inhabitants of these very tall buildings.

The matter is worthy of serious attention. People have had it amply demonstrated to them that owners of buildings that were called fireproof and that have been subjected to fire test, either of local fire or of conflagration, have come out of it with a more or less serious but always partial loss, whilst the tenant almost as invariably, particularly in conflagrations, suffered a total loss. The fact of an occupancy of a so-called "fireproof" building has therefore meant but little to the tenant. Yet all the blandishments of advertising and other persuasions have been thrown about him to get him to occupy such buildings because of their superiority over those "ordinarily" constructed.

Electrical and Mining Building, Case College, Cleveland.

The trouble comes from many causes. There has seemed to be a sort of unintentional, or at least innocent, conspiracy 'twixt grossly inadequate building regulations and their lax enforcement, carelessness or lack of sufficient ability or intelligence on the part of architects, the anxiety of the insurance companies to take chances on almost anything, and the equally as reprehensible desire of our people to build only as well as they are actually forced to (with foolish disregard for their own best interests). A conspiracy, innocent or criminal, whichever you wish, that has led to a misinterpretation or misapplication of the term "fireproof."

In most cities the building regulations merely insist that the structures of maximum height permitted must have steel frames and hollow tile fireproofing constituting and covering the structural skeleton, while buildings of lower stature are permitted of reinforced concrete skeleton and still other classes of alleged slow-burning, wood framing, and so on down to the veriest fire-trap.

The moment a man complies with the strict letter of the law and uses steel and hollow tile fireproofing for his framing, or even one of the many substitute systems of reinforced concrete or other non-combustible, if not fireproof, modes of construction, he ignorantly or criminally believes that he has done the whole thing and is justified in claiming that he has a "fireproof" building. He then goes to work and uses all sorts of perishable and combustible materials externally and internally, lavishes on wood finish and paint and varnish galore and pretends that by some divine dispensation the fact of his structure being immune from fire attack will render all these other things almost immune. The result has been fully demonstrated in Baltimore and San Francisco and in a thousand other places. Even the blind may almost see the fatal error of this exceedingly foolish belief or hope. In those fires the structural portions of buildings have generally stood up splendidly and fully proven their imperishable and undamageable properties, but all else has been wiped out of existence.

What people seem most obtuse about is that any building, like the strength of a chain, is only as completely and fully fireproof as is its weakest part. A building must be fireproof in design as well as in construction. The men who plan it must have intelligence and must know this and work accordingly. Not only must the skeleton be of steel, covered thoroughly with an undamageable protection, but the outer walls should not be of stone or marble or granite if they are expected to withstand fire. They must be of brick and terra cotta. The stairways and elevators must be absolutely enclosed and with fireproof self-closing doors at every landing so that each story constitutes a unit, virtually a separate building by itself; windows must be protected with metallic and asbestos; sash and wire glass against attack from external fire; communicating doors must be of metal or other incombustible material, so that each room, not only each story, forms a separate unit, in which fire may possibly originate, but in which it may be confined at but the loss of the contents of that one unit and insignificant damage to merely the decoration of that room. All such safeguards as these must be taken, ample water protection provided, alarms and all that sort of thing, so that the intelligence and co-operation of man may be quickly called into use in the extinguishing of some incipient fire in any one unit of space.

Science Building, Western Reserve University.

To such a building and such a building only, does the term "fireproof" rightfully belong. To all else it is a misnomer, criminally misleading and cruel. If the Singer Building is so constructed, with intelligent solicitude brought to bear in the devising of all its parts and accessories, then they might as well carry it up to sixty or eighty as to forty-two or ten stories, and I would as lief and rather occupy the eightieth story than the third floor of ninety-nine hundredths of our present buildings, even though structurally fireproof.

It is a sad commentary, indeed, upon the intelligence of our present-day constructors and capitalists when out of a total of eleven and a half million buildings, valued at $14,500,000,000, we have but four thousand buildings that are even nominally fireproof, in which the structure cannot be damaged though the occupants and everything that is contained in those buildings may be singed or destroyed, and of all those four thousand really but one building that is fully and completely and perfectly fireproof, and that not a great building, occupied by thousands of people, but a poor, little testing laboratory built for the Board of Underwriters at Chicago. Surely we might well build a grand monument to those who have lost their lives through our crass folly or criminal negligence in this matter of construction, and to the memory of almost countless millions of dollars we have wasted, and inscribe it "Sacrified by the merciless stupidity of the most enlightened nation on earth."

Written for THE CLAY-WORKER.

THE SAXTON VITRIFIED BRICK COMPANY.

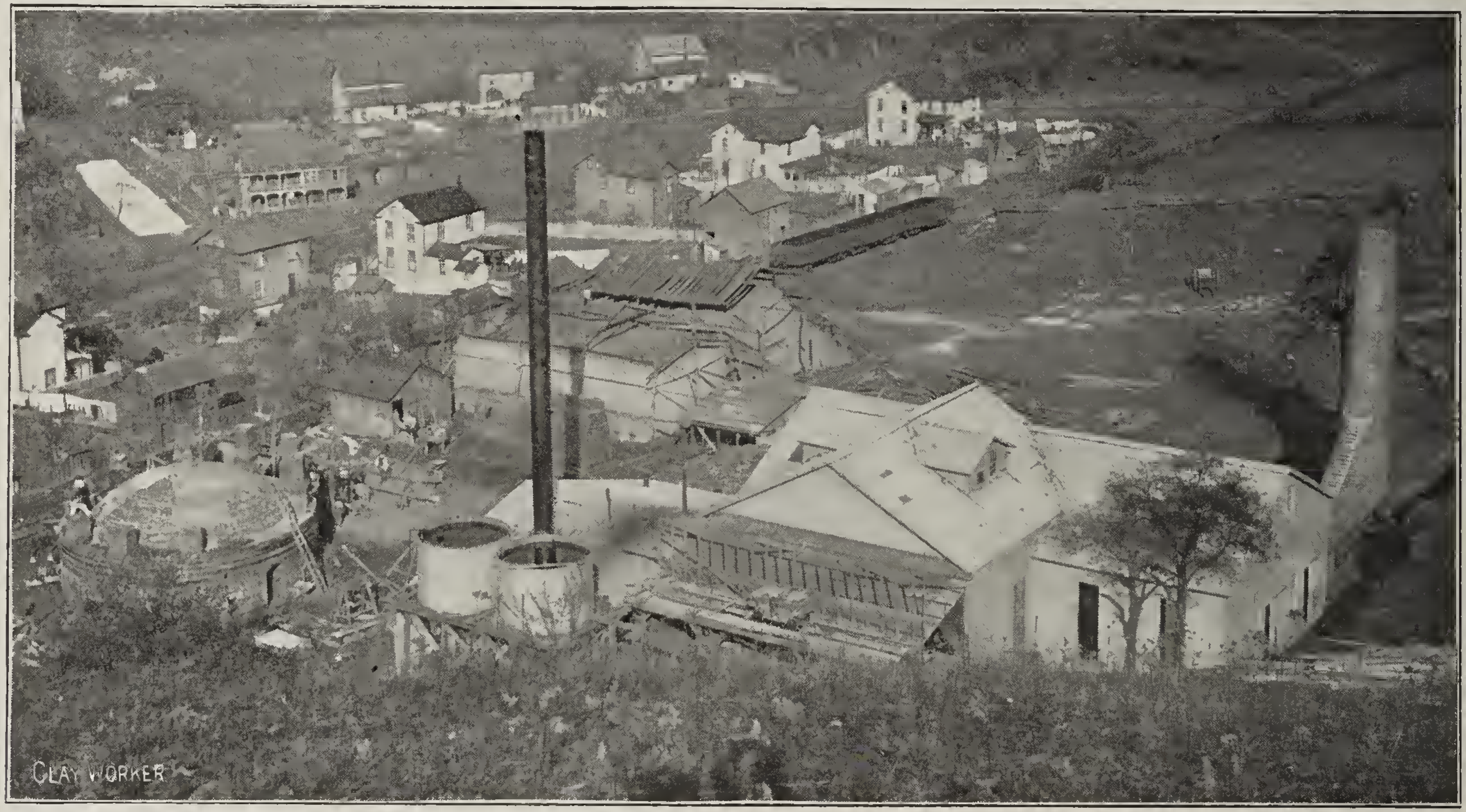
THE SAXTON Vitrified Brick Company is located at Saxton, Bedford county, Pa. The town of Saxton is beautifully situated in the foot hills of the eastern slope of the Allegheny Mountains, on a hill overlooking the Raystown branch of the Juniata River, and on the line of the Huntington and Broad Top railroad, at the outlet of the Broad Top coal fields. The borough has a population of about three thousand inhabitants and is in the center of a thickly settled community.

The brick company was incorporated a little more than a year ago, with a fully paid up capital stock for the purpose of manufacturing vitrified paving brick and blocks, high-grade repressed front brick and common builders.

The directors of this company are all successful business and professional men, with interests in the community. The president is Mr. P. A. Barnet, owner of the Broad Top Bottling Works, and is also interested in the wholesale tobacco and candy business, and one of the principal stockholders of the First National Bank of Saxton. The vice president is Mr. I. K. Little, who, until recently, was proprietor of the Saxton Roller Mills, but is now retired. The Hon. D. M. Stoler, secretary of the company, for some considerable time represented Bedford county in the lower house of the State Legislature, and has for many years been the junior member of the general mercantiling firm of S. B. & D. M. Stoler, who are the leading retailers in Bedford county. The treasurer is Mr. S. B. Stoler, senior member of the above firm, and a director of the First National Bank of Saxton. The remainder of the directorate is Dr. C. O. Miller, a successful physician of high standing, and Mr. G. H. Gibboney, of Everett, Pa. The plant is under the direct supervision of Mr. J. I. Maugle, whose experience in the manufacture of brick covers a period of twenty years or more, and has been connected with the Hydraulic Company of St. Louis and Philadelphia, with the Passaic Brick Company, of Passaic, N. J., and a number of other successful plants. The solicitor is Mr. Alvin S. Little, of Bedford, with an experience of six years as District Attorney of the county, and one of the leading lawyers of the bar, enjoying an extended practice.

The plant was designed and erected under the supervision of the engineering department of The C. W. Raymond Company, and equipped by them. It was built with a view of convenience, saving of labor and economical operation, all of which have been successfully accomplished; and being on the main line of the H. & B. T. M. Railroad Company connecting with the trunk lines of the Pennsylvania system, the shipping facilities are of the best.

The material from which the product is made is a red shale, which has been exhaustively tested. It is taken from a quarry by use of a steam drill and run through a No. 1 Climax rock crusher, elevated to a Raymond 9-foot heavy duty dry pan, screened into a 12-foot pug mill, from which it goes into a Raymond "777" brick machine, No. 2, automatic cutting table, and Victor represses. The brick are dried in a six-track radiated heat dryer of Raymond design. Power is derived from a 100 horse power Atlas engine and 72-inch by 16-foot Atlas fire tube boiler.



Birdseye View of the Saxton (Pa.) Vitrified Brick Company.

The plan of the plant is conceded by practical brickmakers, who have seen it under actual working conditions, to be second to none in the production of finished ware at a minimum cost.

The plant is now being equipped with round down-draft kilns, and in the very near future will be one of the best and most economically operated plants in the State.

Information, like money, must be put in circulation to do the most good; but it differs from money, in that you can give it away freely and still have it.

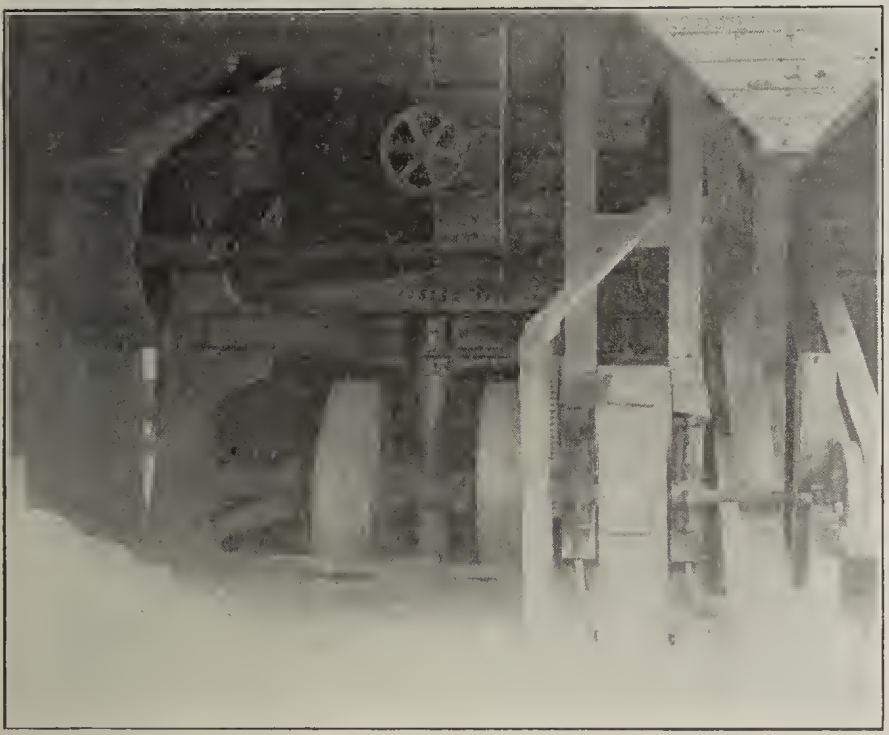
Written for THE CLAY-WORKER.

SYSTEM IN THE CLAY BUSINESS.

UNDER THE HEAD, "System in the Clay Business," I propose to write on the subject of organization, touching but lightly on the ill effects of organization as exemplified in so-called unions and combinations of capital, called trusts. Organization is all well and proper, so long as it has in mind no other force or power than that which works no ill effect on others.

There can be no good effect (lasting in character) come from combinations which tend to raise prices on any commodity or which tends toward control of production; or control of the means of production, but lasting good can come from individual organization of a business, through the introduction of a system or real business method throughout the whole commercial plant.

Shale Bank S. V. B. Co., Saxton, Pa.



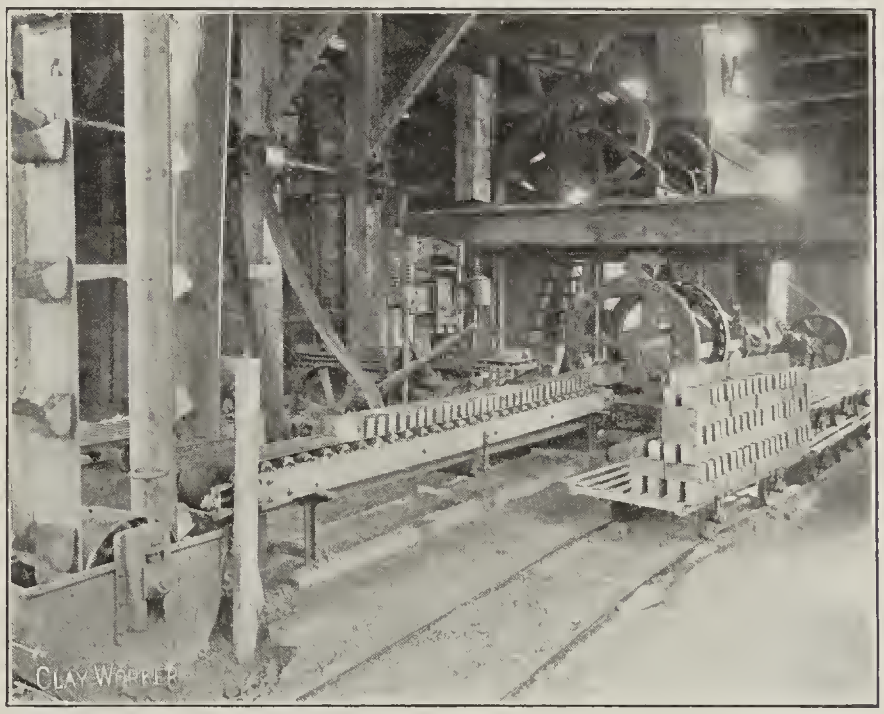
Nine Foot Raymond Dry Pan, at the S. V. B. Co.'s Plant.

When we take up the subject of organization, or system and labor we are considering matters which should be purely matters of legislation, as these questions are of national importance, effecting materially the commerce of the nation. From such organization comes monopoly, and government must handle the question of monopoly. Labor certainly is entitled to consideration, when it feels that it is imposed upon.

Labor is the greatest power within our consideration. If the time has come when it needs protection from our grasping combinations of capital, such protection should come through legislation, thus assuring all the same conditions under which to work and figure; such protection, as lawful limitation of hours, minimum wage scale, etc., given by legislation without the intervention of unions, would give the laborer independent action and would not subject him to the mistaken guidance of union leaders nor to the competition of his fellow laborer, except such competition as is essential to true manhood and to progress, the incentive to gain for himself the maximum wage for duty well performed.

When we take up the subject of organization, or system in business, we are considering a question of vital importance to the clayworking trade, as vitally important to them as it has proven to be to other great and successful industries.

As the world progresses over periods which we, in our finite conception, are pleased to call time, the tendency toward secretiveness grows less and less. It is no longer considered a mark of shrewdness to carry on business behind closed doors, nor to lie awake nights thinking up tricks to "do" our competitor, but the man who gets there for sure is the one who goes along in harness with confidence, or knowledge, following a system which he knows absolutely will bring him to sure results.



Making Side-Cut Brick at the S. V. B. Co.'s Plant.

This is the real value of system—it helps the man; relieves him from uncertainty, or the worry which kills both man and business. A business conducted under a good system has to grow or is discontinued through a positive demonstration of its limitations.

A man possessed of a true knowledge of the condition of his business is a comparatively happy man, even though the system shows him the approach of failure, for in that case he meets not a hidden enemy but a foe in the open. Perhaps many of the readers of this journal will recall the story of a young man weighted down with the curse of hereditary disease. He feared it, knew not when to look for it, lived in dread and approached madness. He consulted an eminent specialist and he confirmed his fears, and on being pressed by the young man to give an approximately close date at which he could expect the appearance of the dread disease, the specialist informed him that it would come upon him in four months. The young man asked if he could be assured that there was positively no chance of the disease coming upon him short of the stated time. He was assured that there was no danger and he then determined that he would make the most of his four months of freedom from fear. Four months of happiness; while this does not seem a point on which one could enthuse much, it serves to illustrate the point. The story goes that the removal of worry had such a good effect on the young man that he, when the four months had elapsed, refused to believe that he was approaching the end and just passed the proscribed point and "lived happily ever afterwards."

The moral, as applied to clayworkers, is not perhaps one that would be available for all, but none can dispute the statement that when one faces disaster and is fully acquainted with the causes leading up to it he may in many cases avoid the trouble. A good system will not always provide capital, but when taken in time will save it.

For the clayworker it will do much; help him in every quarter; show him his mistakes; reveal unprofitable ventures; show up places where new methods are necessary, where economical contrivances must be provided. It will set him to thinking and not to worrying.

System is not a ready-made garment, to be worn by all, but must be made to order for each user.

System is knowing how to know what you should know and knowing it quickly.

(To Be Continued.)

Written for The Clay-Worker.

THE SCHUYLKILL VALLEY CLAY MANUFACTURING COMPANY, SHOEMAKERSVILLE, PA.

ABOUT TWELVE MILES from Reading, Berks county, Pennsylvania, is the picturesque town of Shoemakersville, in the valley of the Schuylkill river, surrounded by ideal farms of thrifty, honest Pennsylvania Germans. The plant is located about 70 miles from Philadelphia, on the Schuylkill division of the Pennsylvania railroad. Some seven years ago a fine deposit of shale was discovered close to the railroad and an up-to-date sewer pipe plant was erected by the Schuylkill Valley Clay Manufacturing Company. George W. Hunter, president; W. H. Clausen, general manager; N. H. Kirk, superintendent. Their main office is in Philadelphia. No expense has been spared in building a modern plant in every detail.

Plant of the Schuylkill Valley Clay Mfg. Co.

They manufacture sewer pipe, flue linings and brick for their own use, and have splendid transportation facilities on spur-track from the Schuylkill division of the Pennsylvania railroad, and short hauling distance to the Philadelphia & Reading railroad. The company owns sixty-six acres of shale and plastic clay on bottom land and the product is a strong, well-glazed, vitrified pipe equal to the celebrated Akron pipe.

The buildings are a four-story brick factory building, about 60x200 feet, and a four-story wing, about 50x50. The shale and clay are dug by hand method, from a shale bank about 50 feet high. The shale is hauled to the plant by a gravity railroad and in two-yard dump cars, and none of it is weathered. It is used as taken from the bank. Some shale and clay is stored under sheds to take care of needs in bad weather. This shed is 75x75 and 12 feet high. The material is ground in one Chambers nine foot and one Martin seven foot dry pans and elevated in buckets to a gravity screen, four feet wide and thirty feet long, and tempered in two ordinary wet pans.

Sewer pipe is made from two to twenty-four inches in diameter in two, two and one-half and three feet lengths, and flue linings, from 4x8 inches to 18x18 inches. The pipe are set three and four high and burned in eleven square and one round down draft kilns. No derrick for setting large pipe is used. The sturdy Pennsylvania Dutchmen lift these pipe with as much ease as a few pounds of feathers. They get a certain swing from practice to do this successfully.

The burning is accomplished in from four to five days and nights. Anthracite rice coal is used for fuel, with forced draft. This coal is taken from the Schuylkill river. It is washed into the river from the mines in the spring. They find a ready sale for all their product, including their seconds. They have a very small stock on hand, and everything goes like hot cakes. The superintendent, Mr. N. H. Kirk, has been with the company since it started, and is a man of sterling character, good judgment and executive ability as a manager.

The Schuylkill River, Near the Plant Schuylkill Valley Clay Mfg. Co.

About seventy men are employed the year round and every one does his part of the work willingly and carefully under Mr. Kirk's leadership. The men receive good pay and are treated square and on the level, and the best of friendship exists between them and the company. A. V.

Stoneware Pipe and Sewerpipe.—In Germany there exists a distinct difference between pipe made of shale and that made from stoneware clays. Stoneware pipe is usually made from the clays which are used for the manufacturing of stoneware, and such pipe has a yellow, hard-burnt body, with a brownish yellow salt glaze. The body absorbs still about 5 per cent. The pipes are used for acid works, and are, as a rule, subjected to an acid test. This test consists in boiling the fine powdered body in a solution of 25 parts sulphuric acid, 10 parts of nitric acid and 65 parts of water. The solution is boiled until all nitric acid is evaporated and the sulphuric acid begins to fume. After cooling, add 10 c. c. of nitric acid, and boil again; after drying, the loss in weight is ascertained. Good stoneware pipe should not lose more than two per cent. in such a test. Sewerpipe is not necessarily vitrified in body, and can absorb as much as ten per cent. However, it should stand a good compression test. If subjected to the above mentioned acid test they will lose more than two per cent.—Deut. Topf. & Z. Z., No. 84, 1906.

In the school of experience is one place where we all get compulsory education.

The Brick Prices in Berlin.—The prices paid for brick in Berlin last month were as follows: Backing up brick, from $5.60 to $6.20; hard burnt klinker brick from $9.60 to $14.40; yellow face brick, $12.00 to $16.80; and sand-lime brick, $5.70 to $6.25 per thousand, delivered.—Deut. Topf. & Z. Z., No. 86, 1906.

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Green Colored Brick For Chimney Purposes.—An architect in Southern Germany has specified the use of a green engobed brick for the building of a factory chimney. He wants an engobe which will give a matt effect in order to harmonize the color effects on the other factory buildings.—Deut. Topf. & Z. Z., No. 79, 1906.

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Efflorescence of Brick in Enclosed Rooms.—In a new building the walls of the rooms inside showed considerable efflorescence. It was, however, also observed that not all rooms showed this cause. The brick which were used in the building were carefully tested, but showed no indication of any soluble salts, so that the brick could not be held as causing the trouble. Upon further investigation it was found that those rooms which were dried out with coke stoves showed this cause, while the ones which were dried natural did not show these defects.. An examination of the coke used showed 3.66 per cent. of sulphur, and it must be attributed to this sulphur that the efflorescence on the brick was caused.—Tonind. Z., No. 113, 1906.

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The Lead Law in Holland.—A law against the use of lead in pottery glazes has been put into effect since August. This law will work very much against the firm Aktiengesellshaft "Sphinx," formerly Peter Ragout, of Maastricht. The law prohibits the employing of males under 17 years and of women altogether in such factories which use colors in which more than 2½ per cent. of lead is used. As this firm employs over 800 girls in the printing establishment for their pottery ware, it can readily be seen that it will affect the manufacturing considerably. (The firm above mentioned is the same which caused so much trouble with a New York importer as agent in regard to the duties to be paid upon a certain class of pottery. —Editor F. S.)—Tonind. Z., No. 113, 1906.

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The Manufacture of Silica Bricks.—There are many points which have to be observed in the manufacturing of silica bricks. First, the bricks should have a certain consistency before they are burned. The quartz sand should be clean and uniform in size of grain. The mixing apparatus should be a ball mill. About one-third of the quantity used for a mixture should be ground fine. The lime mixture should be made from fresh burnt white lime, and should be mixed with the balance of the sand mixture and then put into the ball mill. The whole mixture should be ground for about one-half hour. The size of the grain of sand should be about seven millimeters. The best method for getting proper mixing is to weigh the different ingredients, and to measure the right amount of water used for the lime. The bricks formed from this mixture should be dried very carefully before they are put into the kiln. The best kiln for burning dinas or silica bricks is the round down-draft type. The bricks should be protected from the direct flame as much as possible and brought up gradually to a red heat. After the kiln has attained this red heat, it can be raised quickly to a white heat and the brick should be burnt between a cone 12 and 13. The mistake is usually made in cooling the bricks too soon, which makes them brittle. The cooling is in reality more important even than the burning. All fire boxes and all other openings in the kilns should be properly closed up and remain in that way until the kiln is cooled.—Tonind. Z., No. 120, 1906.

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Fined For Selling Pottery With Lead Glazes.—The German law regulating the use of lead in pottery glazes has recently been tested again in Coethen. Six pottery firms located in Coethen were fined for selling pottery which could not stand the test as described by law. The official test test is boiling for half hour in 4 per cent. solution of acetic acid without dissolving any lead. The experts in the case were Dr. von Bruun, as health officer, and Prof. Kraze, who has charge of the ceramic department at the technical school in Coethen. The case is the first one in the duchy of Anhalt, and has caused great consternation among the pottery manufacturers, and it is certain that the case will be fought through all instance of the court.—Deut. Topf. & Z. Z., No. 82, 1906.

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The Import and Export of Porcelain in Germany.—The import of decorated tableware in Germany for the year 1905 was 737,000 marks; for fine art porcelain, 282,000 marks, and for white porcelain, 196,000 marks. The exports for the same articles for the same year were, respectively, 46,285,000 marks, 14,615,000 marks and 5,482,000 marks. The country to which the most was exported was the United States, which took 48 per cent. of the total export business. Next was Great Britain, which took 17 2-3 per cent. of the export amount. This is considered very remarkable because England itself is such a great pottery country. While Great Britain imported in all 11,897,000 marks of German porcelain, France only imported 1,736,000 marks in porcelain pottery from Germany.—Keram. Rundschau No. 36, 1906.

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The Value of Old Meiszen Porcelain.—The collection of old Meiszen porcelain which was owned by C. H. Fischer, of Dresden, was recently sold in Cologne. Among the buying public there were many representatives of foreign museums and art dealers. The greater part of the collection consisted of articles which were manufactured in the first part of the eighteenth century when Herold and Kandler were the leading artists of this establishment. Mark 6,000 ($1,500) was paid for a crinoline group of a shepherd and shepherdess. A statuary, six inches high, representing a cavalier, was sold for $1,000, while a soup tureen with plate, which formerly belonged to Duc Klemens August, of Cologne, was bought by the Dresden museum for $350. The sales of the first day amounted to Mark 80,000 (about $20,000).—Deut. Topf. & Z. Z., No. 87, 1906.

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Sand-Lime Bricks.—According to a bulletin issued by the Royal Prussian Testing Station of Grosz-Lichterfelde-West, there exists today in building circles still a prejudice against the use of sand-lime brick for building purposes. However, the testing station authorities are of the opinion that after the issue of a bulletin to be published later on, which will show the different tests made in the last year with sand-lime brick, that this prejudice will become less. The report, as it stands today, is of material interest, especially since the German Association of Sand-Lime Brick Manufacturers has brought suit against Mr. K. Dummler, on account that he printed in his paper exactly the fact as stated by the royal testing station. The sand-lime brick manufacturers at the time claimed his statements as being false. The suit which the association brought against Mr. Dummler has not been tried so far.—Deut. Topf. & Z. Z., No. 87, 1906.

Written for The Clay-Worker.

CONVENTION OF THE UNITED STATES POTTERS' ASSOCIATION HELD AT WASHINGTON, D. C., DECEMBER 4TH AND 5TH.

NEARLY ALL POTTERY manufacturers attended the annual meeting of the United States Potters' Association which opened Tuesday morning and closed with a brilliant banquet on Wednesday night at the Hotel Raleigh, Washington, D. C. The meeting was the most successful ever held by the association and was attended by a larger representation of manufacturers than ever before.

Much good was accomplished, each manufacturer learning something of interest and benefit. One of the acts of the association was the endorsement of the movement now afoot in Washington for river and harbor improvement. The national committee on the subject has been in session at the Capitol City all week, there being about 1,500 people present, representing every State in the Union. The argument used by the members of this enormous delegation is that if the United States has seen fit to spend millions of dollars for the building of the Panama canal there should be no opposition to spending all that is necessary to improve the inland waters of the United States.

Congressman Burton now has a bill asking for a big appropriation for the proposed nine-foot stage in the Ohio river, and he was one of the speakers before the national delegation yesterday. He is strongly in favor of the river improvements and has interested enough men of prominence to get the bill passed at the earliest period possible.

There was no action taken by the association on the wage scale, as the potters are under an agreement which does not expire until next October, but there was a committee appointed to decide upon a price list to be charged by the manufacturers for their ware. The committee will meet in Pittsburg next week and will arrange the list, subject to approval of the association.

One of the most interesting addresses made before the association was delivered by W. E. Wells, of the Homer Laughlin China Company, of East Liverpool, Ohio. His subject was "Labor," and he did not omit one feature of that grave question. His effort was highly appreciated by the association and his address was made a portion of the minutes.

H. P. Knoblock, of The Colonial Company, East Liverpool, Ohio, Chairman of the Transportation Committee, made a lengthy and intelligent report. He emphasized the assurance of the Pennsylvania Railroad Company to give the potters a uniform freight rate, so as to permit them to have fair competition with foreign manufacturers, and the members of the association were well pleased with the success of the committee. The committee recommended that the matter of slow delivery be taken up with Congress and that body be asked to pass the necessary legislation to compel the railroads to pay more attention to shipping freight.

The committee urged drastic measures to bring about a better delivery, asking that the laws be formulated so as to allow the manufacturer demurrage every time there is an unnecessary delay in the transportation. It is thought that such a law will make the railroads wake up to the fact that they must take care of the shippers.

Members of the United States Potters' Association, at Washington, D. C. Photographed Dec. 5, 1906.

Other reports of interest were made by Henry Brunt, of the Maryland Pottery Company, Baltimore, Md., who is Chairman of the Historical Committee; L. I. Aaron, East Liverpool, Ohio, Chairman of the Statistics Committee, and F. R. Haines, Baltimore, Md., Chairman of the Art and Design Committee. Mr. Haines will have charge of the pottery exhibit which is to be made at the Jamestown exposition.

After a strenuous session of two days, the business came to a happy ending with the banquet. W. E. Wells, the prince of toastmasters, presided, and acquitted himself in the usual brilliant manner. Some of the best speakers in the country were present and their addresses were hugely enjoyed.

James Pass, of Syracuse, N. Y., is the new president of the association.

LAND DRAINAGE

BY J. J. W. BILLINGSLEY

HOW DRAINAGE AFFECTS THE LAND.

UNDERDRAINAGE, or tile drainage, serves to relieve the soil and subsoil of free water, which has a serious effect on our growing crops if allowed to remain any considerable length of time in the soil.

Drains serve to dry the land and put it in condition to plow early in the spring. Drained land is from eight to ten degrees warmer than like soils not underdrained. The increased warmth aids much in the better germination of the seeds, and more luxuriant growth of crops. Rain in the spring is warmer than the soil and in percolating through the soil warms it. In midsummer the water of rainfall is cooler than the soil and, in passing through to the drains, cools the land.

Underdrains make the soil open or pliable and to some extent prevent puddling or the running together of soils, allowing the air to pass into the soil spaces.

Underdrainage opens up the soil to the oxidizing effect of the air which passes freely among the particles. The removal of the free water and the retention of the water of moisture, together with the increased temperature of the soil, make an ideal condition for active nitrification so necessary to make plant food available.

Rainfall usually contains ammonia equal to six or eight pounds of nitrogen per acre, and the sufficient underdrainage of the soil and subsoil will so open the soils as to cause the water to pass down through the soil to the drains and the ammonia will be taken up and held for plant food.

The better the aeration, the more pliable condition, and greater warmth of the soil, causes the more rapid decomposition of organic matter and increases the productive power of the land to the point of growing maximum crops. The more general the underdrainage of farm lands becomes, the more will the damage from floods be lessened, and needed moisture for the growth of crops be conserved in the soil.

Underdrainage enables the husbandman to plow his land and get the soil ready for planting or sowing the seed with much less labor, besides it is evident that if the soil is broken into minute particles by the action of underground drains and by tillage, its power to hold the needed moisture will be increased.

In the cultivation of crops they may be cultivated sooner after a rainfall, and at all times with much less labor if the soil is well underdrained.

It is a well established fact that crops suffer but little if any from long continued rainfalls or from excessive drouths if the land is sufficiently tile-drained.

It is also a well established fact that crops growing on lands that are sufficiently underdrained come to maturity several days sooner in the season, and the rate of production is increased twenty-five per cent. or more, and the grain is much better, which means a greater vitality and increased market value, compared with crops grown on soils equally good not underdrained, other conditions being equal.

WHAT DRAINS DO IN WINTER.

Those who have had to do with tile-drained soils are quite ready to admit that the effect is so beneficial that no land owner can well afford to neglect to underdrain lands that are intended to grow farm crops, that really need this important improvement. However, we are liable to think that the benefits of drainage are more fully realized during the spring and summer months—that in the fall and winter months the surface soil and subsoil is practically dormant. This, however, is a mistaken idea. Even in winter there are forces at work that are fitting the soil for the coming spring and summer—a work has been going on during the winter months that will have much to do with our success in crop growing the coming season. The soil from which the surplus water has been withdrawn by underdrainage will be granular, open, and easily separated, though in a frozen state; the air can circulate through it, and when thawed is open and arable. The particles are so broken up by the freezing and thawing that it is a well pulverized seed bed with a firmness so much desired. But the frozen soil not drained of its surplus water is altogether different. When frozen, the spaces between the particles of soil are filled with water and the whole is frozen together. The porosity is wanting. When the soil is thawed it runs together and when dried is in a hardened mass, so that there is little if any gain from the freezing of the soil during the winter, unless the soil has a good supply of organic matter in its composition.

If the soil is well underdrained the frost will penetrate much deeper, freezing the moisture into fine crystals, separating the particles of soil and subsoil, and still maintaining the open porous state, allowing the air to circulate through such soil. If a thaw comes at any time, the surface water will find its way to the drains as soon as the ice crust (if there is any) is thawed. It is often true that air in the drains is warmer and in penetrating the earth upward from the tile drains, thaws out to the surface.

Land not tile-drained does not freeze so deep and the whole mass of earth is practically locked up and will often raise up as a body, carrying everything with it; then in thawing, the surface runs together in a mortar state, and if rain comes the surface is washed and the loss of surface fertility and organic matter tends to impoverish the land. Otherwise the well underdrained soil all the winter long is being fitted to be the delight of the husbandman in the growing of maximum crops when the spring and summer seasons come.

BURNING TILE.

Special importance attaches to the work of burning tile that does not to any other part of tile making. If a tile is marred at the cut-off, the clay is thrown back into the pit or mill and is worked over, or if a tile is spoiled in the drying room or before it is set in the kiln, there is no great loss of labor; but if the tile is spoiled in burning then there is a loss of all the labor put upon it from the clay pit to the kiln, and also a loss of the fuel required to burn it. In some tile factories the per cent. of damaged tile taken from the kiln equals quite the per cent. of profit that would have been realized if the burn had been good throughout. Sometimes poor burns are the result of setting tile too green, or it may be in part careless setting, or it may be the result of water smoking too rapidly. The work of burning needs, above all, to be made a success every time, and those having this work in charge should study and strive to produce the best possible product. In the burning of some clays it is necessary to raise the heat slowly and steadily; other clays the heat may be increased rapidly. The too sudden cooling of kilns may seriously damage the tile. There are many things that need careful watching in the burning of different clays. Some clays require but little care in burning them—the tile vitrify readily with little loss. Burners who are only familiar with the latter clays are very likely to think that burning tile is an easy thing to do and are quite ready to think that they are competent to burn difficult clays. Those who have had experience in burning clays that are difficult to manage are not quite so ready to affirm that they know a clay at sight. Clays need to be carefully studied, tested and learned in detail from the clay bank to the cooling of the kiln to work out the best results possible. One may have an occasional good burn, but fail to profit by it in making future burns, because he fails to see the important points.

The mixing of clays, their tempering, pressing, handling, drying, setting in kiln, water smoking, the raising of heat, and the highest degree of heat necessary to secure the best result, and the length of time to cool the kiln and the exposure of the tile to air rushing into the kiln, are all important factors, in whole or in part, in the management of difficult clays. Those who have had a considerable per cent. of loss in burning need to give special attention to this matter. Clays need to be studied—learned, and well learned, to secure the greatest success.

THE SYKESVILLE CLAY PRODUCTS COMPANY.

UNDER the above title a new building brick plant has been established in Clearfield County, Pa., which is the home of a number of large clayworking plants, owing to the immense deposits of a superior quality of clay for first-class building brick found in that section. Although the company was organized at Sykesville in an adjoining county, the plant has been located across the line in Clearfield county, where they have an abundance of fine clay.

The company was organized in the summer of 1905, with Jacob Kuntz, president, W. T. Buchheit, secretary and treasurer, and T. W. White, general superintendent, and no time was lost in erecting a plant that is a model one. It is equipped throughout with E. M. Freese & Company machinery, consisting of one dry pan, a 50,000 capacity combined stiff mud brick machine and automatic cutter, one repress and all other necessary appliances. And Mr. Buchheit is so well pleased with the work of the Freese machinery that he says he heartily recommends it to any one in the market for stiff mud machinery, for he says, "It gives satisfaction in every respect."

From the repress the brick go to a hot air dryer, and thence to round down draft kilns, of which the company now has six, having enlarged from a one kiln plant in the past year. Nearly all of the brick burned during the winter of 1905 were used in the construction of their kilns, but they turned out nearly 1,000,000 red building brick the past summer, for which they found a ready demand at good prices. For a new company their prospects are unusually flattering.

Factory of the Sykesville Clay Products Company, Sykesville, Pa.

It has been logically said that push, combined with intelligence, will carry a man further with success than genius combined with indolence. But what's the matter with having an occasional combination of push and genius?

DETROIT'S NEW POTTERY.

WORK ON Detroit's new pottery, which will be located on Jefferson avenue, directly across from the water works park, has been begun. The Pawabic pottery, already very well known, will be made under the personal superivsion of Miss Perry, who has perfected this article and has won favorable recognition everywhere. With Miss Perry will be associated H. J. Caulkins, general manager for H. J. Caulkins & Co., Ltd., of Detroit.

The new pottery will be one of the handsomest bits of architecture in Detroit and bids fair to rival the famous Rookwood pottery in Cincinnati. The building will be of old English design, the first story to be finished in brick, with cement stucco, and the second story of English half timber. The building will be 77 feet long and 49 feet wide, and will cost about $11,000. Stratton & Baldwin, of Detroit, are the architects.

The first floor has been conveniently arranged with clay and kiln rooms in the rear, both to be built on a reinforced concrete floor. This portion of the building will be two stories high and a gallery is to be built on the second floor overlooking the kiln room. Out of the roof above the clay room an oil house will be built. The front portion of the first floor is to contain the machine, molding, glazing, drying, decorating and packing rooms. The front entrance, however, leads directly to the office upstairs, which will be finished in old English style, with a huge fireplace. On the second floor will also be found the exhibit and store rooms. The roof of the building will be of red tile.

Detroit people generally are quite proud of Miss Perry's work. Until recently her work shop has been in a barn at John R and Alfred streets, and the new quarters show well the popularity of her work.

And now they say that Joseph Medil Patterson is grieved because he has been burdened with a fortune instead of being taught to work. Don't worry, Joe, there are lots of people ready to swap their chance for work for your fortune, and do the necessary teaching to equip you for working to boot. But, now, really, aren't you just "kidding," Joe?

Written for THE CLAY-WORKER.

NORTHWESTERN OHIO BRICK AND BUILDING NEWS.

WITH BUT THREE exceptions, all the Toledo brick plants are closed down for the winter. The plant of the Collingwood Brick Company, the Findlay Hydraulic Press Brick Company and the Ohio Brick Company, which are equipped with dryers, are running full blast and will continue to do so. Louis Madson, superintendent for the Findlay plant, stated that his concern had orders booked that would keep the plant busy for the next two months, while the Ohio people report that they have orders booked that will keep that plant going for the next couple or three months. Of the independent concerns, those not belonging to the Toledo Brick Supply Company's list of nine plants, Warren Boice, of the Northern Brick Company, stated that he had about a million bricks on hand, but that the entire stock would be cleaned up before spring. John B. Fox, of John B. Fox & Co., stated that he also had in the neighborhood of a million bricks on hand, and that he would have this stock cleaned up by the time he had new brick from the kiln next year. The Toledo workhouse plant reported that it had a stock of 850,000 brick left from a season's production of 2,200,000 bricks, and that the entire stock would be gone by New Year's.

Taking in the situation as a whole, the fall delivery of brick from the Toledo yards was not up to expectations and the standard of former seasons. Through the courtesy of President Howell and Secretary-Treasurer Dakin, of the Toledo Brick Supply Company, the correspondent for THE CLAY-WORKER was given some interesting information in connection with the present condition, as it may be compared with former years. October, this year, showed the smallest delivery, with but one exception, of all the Octobers for the past ten years. September proved to be the lightest month, in point of delivery, of any September of the past ten years. August total delivery of bricks stands third, from having the poorest delivery within the space of a decade.

"I don't understand why the delivery this fall should have been so light," said Secretary W. O. Dakin, "unless it is because we had such a large delivery very early in the season. You see it is like this: last winter was a very mild one and permitted of building operations being carried on unabated, thus permitting of excavating for buildings very early in the spring and likewise permitting of buildings being completed earlier in the season than if the opening of building activity should have awaited the close of a severe winter and the usual thaw. April, May, June and July saw big deliveries of brick; however, the total number of bricks delivered from the middle of May to November 1, this year, is about 600,000 behind the same period of 1905. This, however, is not a just comparison. It would be more proper to compare the deliveries from earlier in the year to the present time with the same period of 1905, in which case 1906 would eclipse by far the total deliveries of 1905. Take May, this year, for instance, and the total deliveries reached 3,800,000 bricks, which is surpassed by only one May in the past ten years—May, 1889."

Owing to some of the local concerns being unable to keep or get help the latter part of the season, in which case the plants were compelled to run rather irregular, there was an early closing, some of the plants closing a month earlier than usual, all the summer plants being closed by October 7, some of them closing the middle of September.

The local plants haven't as much of a surplus stock on hand as they had a year ago. November 1, the Toledo Brick Supply Company's nine yards had 20,375,000 bricks in store, while November 1, this year, according to Secretary Dakin's report, the stock is only about eighteen million.

Secretary Dakin, in disseminating reasons for the small delivery of brick, also referred to many of the orders coming to his office as being for repair jobs. "There have been any amount of small orders of this kind for all the way from 1,000 to 5,000 bricks each," said the secretary.

In making a careful examination of the records at the office of the city building inspector for the past couple of months, or the entire season, for that matter, the facts, as given by Secretary Dakin, are borne out. Since the first of October, only 11 permits for the construction of new buildings, of a valuation of $5,000 and up, were taken out; dwelling for the C. F. Curtis estate, $8,000; dwelling for Roger Huber, $5,500; addition to United States postoffice, $8,000; commercial and office building for Sidney C. Gibbs, $5,000; dwelling for the C. F. Curtis estate, $6,500; building for the St. John University, $38,000; building for bottling works for Mohr Bros., $5,000; branch exchange building for the Central Union Telephone Company, $9,000; building for the Y. M. C. A., $250,000; dwelling for G. G. Burtsfield, $6,500; apartment dwelling for I. B. Hiett & Co., $5,000.

The last monthly report of the city building inspector is rather misleading. There were just 117 permits, with a total valuation of $509,780, issued during the month of October. From this, the outside world, and the world inside of Toledo, for that matter, is given the impression that the city is seeing wonderful building activity during the fall month. This, however, is not the case. There is one permit, that of the Y. M. C. A. building, with a valuation of $250,000, that should have been issued before the structure was begun. Instead, the permit for this building was issued on October 31, while the building was dedicated on January 8 last, over ten months ago. To carry forth the right impression, the permits for October should really be 116 and the valuation in total of the permits for the month should be $259,780. With this change, there would be very little difference in the figures for October, last year. And many of the 116 permits were for repairs, just as Secretary W. O. Dakin has put it. While the plans of the Y. M. C. A. building were not completed at the time of dedication, in view of other additions to be made afterward, the main structure was completed at the time the building was dedicated.

While there is not quite so much of a stock of brick on hand as there was a year ago, there is no occasion for an alarm to be sounded of a "brick famine" in the spring. In fact, Toledo now has three live winter plants, that of the Collingwood Brick Company, the Ohio Brick Company and the Findlay Hydraulic Pressed Brick Company, which have a total daily capacity for about 100,000 bricks. Even if Toledo manufacturers were entirely out of brick by the first of the year, the three winter plants would be enabled to make enough to supply the needs of the city and surrounding country until the other nine plants could have new brick ready for market in the spring. Such a scarcity, however, is not existing, so there will be a good stock of brick on hand when the strictly summer plants are again set in operation.

The Ohio Brick Company will close its plant about the middle of the month that annual repairs may be made. The plant will be closed down for a couple of months, probably longer.

The Collingwood Brick Company is contemplating putting in a stiff mud brick plant in addition to the large new plant now being erected at the intersection of Stickney avenue and the Michigan Central railroad. This is for the purpose of taking care of the demand for hollow brick in the city and the surrounding country. When this demand is amply supplied, the machinery may be turned to making tile.

The Findlay Hydraulic Pressed Brick Company will probably close down for annual repairs about the middle of January, remaining closed for a month or more.

Brick trade is rather dull, but it is nothing more than Toledo brick men expect at this season of the year. The record at the city building inspector's office shows that building activity is light, as only 67 permits, with a total valuation of $163,050, were issued for the month of November, which is some under the valuation of the permits issued for the same month a year ago.

Jacob Brutsch, superintendent of the Clay Pot Works, at Findlay, Ohio, for the past couple of decades, died a few weeks ago. He is survived by a widow and three children. His death was due to consumption. The body was taken to Brownsville, Minn., for burial.

A high wind the latter part of last month partly wrecked the new brick plant of Shealey & Stephen, at Upper Sandusky, Ohio.

T. O. D.

MARTIN'S NEW COMPOUND CLAY CRUSHER.

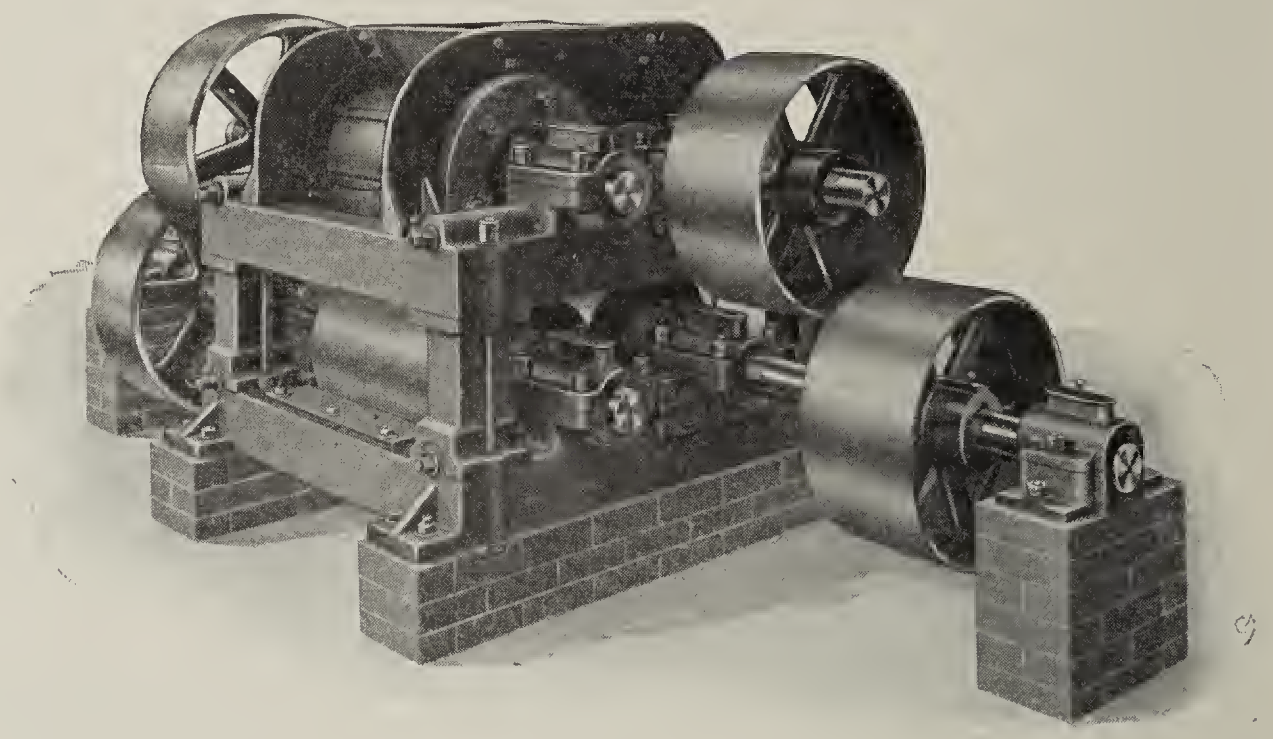
THE HENRY MARTIN Brick Machine Manufacturing Company, of Lancaster, Pennsylvania, has just finished a new compound disintegrator, which we herewith illustrate. This disintegrator is heavily proportioned throughout and put up for great strength and durability. It has special points of merit, one of which is the easy means by which the cutting bars are applied to or removed from the cutter carrying roll, the cutter being cross shaped and having a plurality of cutting edges, so as an edge becomes dull in use, the cutter may be withdrawn end-wise from its roller and turned partially about and instantly reinserted in the groove from which it was withdrawn, which avoids the necessity of regrinding the cutter bars, as either of the cutting edges can be used. The edges may be exposed one after the other so as to have a fresh and sharp edge for use.

The cutter-carrying roller has outward extended flanges in which there are several cutting-receiving openings of cross shape.

The flanges extend beyond the periphery of the rollers so that the clay in passing between the rollers is kept from contact with the shaft and from the bearings.

The rolls in this disintegrator are chilled; the shafts are very heavy turned steel shafts.

The two lower rollers are smooth chilled rolls, the metal being about 2½ inches in thickness and are 18 inches in diameter by 24-inch face. The upper smooth roll is also 18 inches in diameter by 24-inch face and all the smooth rollers are provided with scraper bars which are adjustable and keep the rolls clean and free of clay. All the rolls are bored out and fitted to the heavy steel shafts. The steel shafts are 5 inches in diameter through the roll, turned to 4 inches in diameter through the bearings. The bearings are 13 inches in length. Each pair of upper rolls and each pair of lower rolls are fitted with a heavy band wheel. The fast rolls are provided with rigid bearings, and the slow rolls are adjustable. The cast iron beds are heavy, well proportioned and neatly designed and the hopper is made so that the clay cannot escape through the sides.



New Compound Martin Clay Separator.

These compound disintegrators are carried in stock or in course of construction so that prompt delivery can be made. They weigh 12,000 pounds and have very large capacity and are warranted to give the very best and most satisfactory results under all conditions.

Complete detailed information will be cheerfully furnished upon application to the manufacturers, the Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania, who are the sole owners of the patents covering this special compound disintegrator and who fully guarantee its mechanical construction and its merits.

A POOR JOKE.

A girl said to her father: "Ever hear the story of the bed?" The father said he had not. "You lie there," replied the girl. But before the father "saw it" he thought he had been called a liar and had whipped his child.—Ex.

Written for THE CLAY-WORKER.

HOW?

Better Transportation Facilities a Crying Need With All Manufacturers—Facts and Figures On This Important Subject.

"Now comes the sick hour that his surfeit made."—Shak.

WE HAVE HAD railway rate regulation that doesn't regulate, investigations that don't investigate, and muck rakings that really don't cultivate until, in the language of Shakespeare, we have come to the sick hour that this surfeit has made. It's almost nauseating to think of discussing and wrestling with these subjects further, but yet it has been brought to our attention in a way that is different. We have before us some statistics that, were it not for the serious nature of the matter, would be humorous. These statistics relate to the average rate of movement of freights on the railroads, that is, freights classed as non-perishable, such as brick and other building materials. To fully appreciate the humor of these things a man should recall some time when he has been traveling on a local passenger train and had to take a siding for the fast freight. Then, to fix the matter of time schedules on freight trains in his mind as they are on paper, take a glance at the following figures compiled by railroads as their working time table:

Rates of movement by interstate freight trains as shown by their working time table:

	Miles per hour.	Miles per day.
Southern Railway	18.35	440.40
Washington Southern (R., F. & P.)	22.92	550.08
Seaboard Air Line	14.87	356.88
Atlantic Coast Line	19.98	479.52
Chesapeake & Ohio	15.05	361.20

Average per hour, 18.23; average per day, 437.52.

That doesn't look bad, does it? It's not quite up to the newspaper and magazine articles that we read on the subject of rapid transit, and how time is being annihilated by the railroads, but along with this table, which is furnished us by T. Peyton Giles, of the Stephen Putney Shoe Company, Richmond, Va., there is a pamphlet and another little table showing records of actual time required in moving freight. A shipment from Richmond, Va., to Naples, Texas, a distance of 1,243 miles, was twenty-three days in transit, covering the distance at the rate of 54 miles per day. That was "seen" and "gone one better" by a shipment from the same place to Coatsville, Pa., a distance of 250 miles, which took eight days, the freight traveling at a rate of a little over 31 miles a day. Shades of ye old ox team, and ye gee, haw driver!

And that's what they call rapid transit. It seems a pity that the presidents of some of the roads don't have to take a trip along with a carload of freight moving at this wonderful rate. In the entire table given, which is a record of forty different shipments, the best time made was at a rate of 132 miles a day. The average was 61.61, or 2.57 miles per hour. That's just about the rate of an ordinary mule team, and yet we have been led by visions of rapid transit to sorely neglect our waterway transportation and pay higher rates to the railroads. It is enough to make a man wish for that famous pictorial mule, named "Maud."

From the pamphlet containing this data, we quote the following:

"This movement is not connected or related most remotely with the present craze for inquiry, investigation, persecution or prosecution of corporations.

"It's entirely immaterial to us who gets the freight money or what he does with it, so we get relief.

"We are interested solely and entirely in seeing that we have quicker deliveries at the earliest possible date.

"We are not following a new fad, fancy, or fashion, as is demonstrated by dates on some of the memoranda furnished herewith, which were made by writer in 1903.

"In this movement there is no connection whatever with politics, self-seeking notoriety, or airing the personal views of any man or set of men.

"It is simply a contention for the right of fair barter, which has been recognized since our first ancestor found himself possessed of a round stone suitable for making a hammer head, when what he really needed was a pointed one for a spear head and he made the exchange with his neighbor, who had a stone of the desired shape and dimensions.

"To get away from the stone age, this whole idea is for the right of the man who pays the bill to make the railroads "deliver the goods" promptly.

"The whole commercial class of the United States is suffering uncalled for losses on account of lack of reasonably quick movement of freight from point to point throughout the whole of this country.

"This state of affairs exists today.

"This same state of affairs has continued for many years past.

"The railroads give the same excuses today they have done in all of these years, and make no improvement whatever.

"All efforts by shipper or consignee as individuals have failed to alleviate these conditions.

"Unless powerful, thoroughly organized, persistent and continuous pressure of some effectual character is put on the railroads, no man can give a reason for thinking there will be an improvement at a sufficiently early date to be of practical use to the present generation.

"I ask your earnest and careful attention to the tables attached hereto.

"These tables are absolutely correct.

"They are taken from actual shipments, with no selection whatever, except with a view to covering a sufficient scope of country.

"They are full enough to be fair to railroads, shipper and consignee.

"No exceptionally slow deliveries or cases where complaints of delay were made have been included in these tables.

"They, therefore, show accurately the every-day actual service we have had for years past, and also that what we are getting today is even worse."

Really it does not require any extensive argument to convince us of the truth of this matter, for many a brick man has been up against the same thing; nor does it require urging to make us see the importance of it, for we have been feeling that for some time, but the question is, how? It's an accepted fact that many business men are seriously handicapped by the slow movement of freight and practically all business men have in their hearts a ready welcome for any movement that will give relief on this score. Even railroads are wanting relief and are frequently asking themselves how they may handle it more rapidly. They don't like to have cars of freight lying on side tracks when they might have them delivered and collect their money, and be getting the interest on it, or use it to buy stock in some other railroad, and to our positive knowledge they are making a big show every year of adding more equipment, more rolling stock, more engines, more cars, doubling track and the roads. In fact, they have made so many new cars (on paper) during the last few years that magazine writers have raised the question of what becomes of the cars. It's like that family question of what goes with the pins. They disappear; nobody knows what becomes of them. This is the way it looks like it is with that new rolling stock: It just takes the place of some that disappears. At least we know that freight keeps moving slow and the railroads keep saying they are building more rolling stock. If this additional rolling stock won't help the movement of freight, we come again to that question, how? We want something, and how are we going to get it? The railroads say they want to get it, too; they want to know how. Verily it is enough to make a horse laugh, and a hobo walk, to think of a carload of freight moving along at the rate of 2½ miles an hour.

The remedy suggested by Mr. Giles is that the railroads be penalized and cites the fact that the shipper is penalized at a rate of $1.00 to $2.00 car service for any delay in unloading beyond a specified time, and that it's a poor rule that won't work both ways. It's good logic, too, and some of the States have already made efforts to put it into practice. Just what success these efforts have met with we are not prepared to state. If they are doing good, the idea works out all right; there should be interstate as well as State rulings, and all made to harmonize. The trouble with it is, that to make a set figure, a specified distance that freight must be moved each day without working a hardship on railroads under certain conditions this minimum will have to be put ridiculously low, and will therein permit latitude enough to still keep freight moving at an exasperatingly slow rate. Down in Texas, we believe, they specify it must move 50 miles a day. That's beating the mule team a little, but it's far from being satisfactory. Still, it all helps some, it stirs up the railroads some to get after them, and to that end should be encouraged. The thing we would like to see, that would make us cut a pigeon wing and burn up our year-before-last hat, would be for the shippers and the railroads to all join together in one grand glorious movement, the end of which would be rapid transit of freight on railroads, and not merely on paper. But, the question is, how? What course, by what measure of persuasion and what quality or quantity of argument, or persuasion, etc., will attain this desired end?

We confess to being weary with efforts to regulate railway matters, are nauseated with the rakings of the muckers, and mildly disgusted with investigations that don't investigate, and bluster and wind-jamming accompanying them, but we will gladly welcome a real, good, clean, straightforward movement that gives promise of results. The question is, how?

There is one thing sure, overwork never hurts any man's conscience.

Written for THE CLAY-WORKER.

PHILADELPHIA TRADES SCHOOL.

DEAR OLD Philadelphia is the first city in the United States to adopt the system of trades schools as a part of the public school education, and we take off our hats to her. Italy, France and England have been our predecessors in this respect, and now Philadelphia, with the courage of her own conviction, the necessity of training the growing generation in the knowledge of trades, has opened her first school on the site of the old school, Twelfth and Locust streets. This is one of the unfortunate sections of Philadelphia, and therefore in many ways was one of the best sites for a school of this kind. It replaces the old public school, which has been in existence for eighty years. Let us observe the change.

The formal opening of the trades school occurred on November 12 and presented a never-to-be-forgotten sight to those who were fortunate enough to be present.

More than one thousand visitors thronged the old school building, which has been remodeled and equipped with modern machinery to fit the uses of such an institution. Great interest was manifested in the exhibition of work which was in progress in all departments, students demonstrating the practical lessons they had learned during the first month of instruction.

Day classes in pattern-making occupied the carpenter shop, while in the blacksmithing department fifteen students were hammering red-hot iron into shape.

Fifty boys were at work soldering joints under the eye of an expert plumber, and in the printing room students were setting up type, and correcting proof.

Down in the basement many bricklayers were at work, and the care with which the bricks were being placed gave promise of the future.

Adjoining was a class in plastering, and in watching these men one forgot that this is a school and became lost in the idea that this is really an operation in progress. This project, the first of its kind in this country, is a wonderful one, marking an era of progress, and the aim and scope of its work was a revelation to the invited guests.

The school has come into existence, backed up by the determined efforts of the special schools committee of the Board of Education, strenuously pushed by Murrell Dobbins, who formulated the plan of introducing a purely mechanical and trade course into the system of public education.

Undoubtedly it will be followed by others in every section of the city, and "speed the day." President Roosevelt, in his speech, declared the necessity of more schools of this kind in preference to high schools.

After the visitors had been shown through the building, as many as possible assembled in the large room on the first floor—the carpenter shop—and listened to the speakers of the evening.

Dr. Martin C. Brumbaugh spoke of the imperative need of manual training, insisting that every boy should learn some trade; that "we must teach our boys the things that count in the common economy of civilization."

Franklin S. Edmonds addressed the school on "Industries."

Dr. Talcott Williams spoke of the preponderant forces of the community being among the working classes, and emphasized the need of mechanical training.

The addresses of several members of the board emphasized the fact that free trade education must not be limited to one school.

The fact that every bench and anvil in this institution is in constant use, and that four hundred pupils are enrolled, and four hundred still on the waiting list, proves that the problem should be extended.

While on a tour of inspection the other evening, the correspondent of THE CLAY-WORKER was greatly impressed by the absorbed attention of the pupils—men and boys, black and white—no foreign element distracting their attention from the subject at hand.

The school course is three years, with sessions of the day school from 8:30 to 4:30, every day except Saturday; and of the night classes from 7:30 to 9:30.

The night school runs for a term of twenty-five weeks, while the day school has the regular school term. In addition to studying the trades selected, day scholars are required to take mathematics and the ordinary English branches, including economics. Drawing, which is taught by itself as a trade in the night school, is a part of the course for all day scholars.

The trades so far placed upon the curriculum are blacksmithing, bricklaying, carpentry, mechanical and architectural drawing, electrical construction, house and sign painting, plumbing, printing, sheet metal work and steam fitting.

All of these trades are being taught by having tools and material actually at hand, and by an actual performing of the work through the three years.

Because of the machines required, much space is needed. Thus the blacksmith forges are in the yard of the school building, which has been roofed over to shelter them. The bricks and mortar pits for bricklaying are in the basement cellar, but will later be moved outside and roofed, that the plaster department may be enlarged.

Murrell Dobbins, the Promoter of the New Philadelphia Trades School.

The stationary carpenters' benches are in a room by themselves; the electrical apparatus in another, and so on throughout the entire building.

For each trade taught the instruction is complete; and the requirements such as to turn out a finished workman, who shall be familiar with all operations of his trade, and not some particular end of it. Thus the printing trade is given in composition from the case, in making ready for the press, press work, roller management and manipulating the blending of different inks in color schemes, and the care of presses and selection of paper, so that the graduate in this department will be able to carry a piece of printing through from start to finish.

In house and sign painting, the mixing of paint is included; in blacksmithing, anything that the blacksmith does with iron, and so on. It was an interesting and picturesque sight the other evening to behold the instructor in the latter gather his pupils close about the forge while he explained some particular point which was immediately demonstrated by one of those same pupils. He certainly possessed the faculty of drawing his pupils in close, and their attention even closer.

The arrival of special students to acquire knowledge and facility in just one of the operations embraced in a single trade will be discouraged if not prohibited, since this is not the purpose which was intended, and would necessarily crowd out pupils for whom the institution is to be maintained.

Candidates for admission must be graduates of the city's grammar schools, or must show that they have fair education of about that degree, and must be sufficiently advanced in mathematics to be able to make the calculations incident to the work they are learning. The minimum age limit, at present, is 15 years for the night school scholars, and 14 years for the day school; but these limits may be lowered or raised slightly in the future as experience shall seem to make it advisable. There is as yet no maximum limit, but this, too, may be changed.

It is a strange sight to behold the man and the boy, side by side, learning with rapt attention, the same trade.

One colored man, enrolled as a student, was greatly exercised lest his name should be struck from the roll. He is a night pupil and was obliged to be absent from school three nights in succession, working overtime at his usual day labor. His relief was great upon learning that his name was still on the list. He was working the other night most energetically to regain any lost information. The school does not, and probably never will, make anything to sell, nor is it probable that it will cut into the business of doing work for outsiders, or of furnishing workmen.

To the graduates, themselves, is to be left the task of finding employment, though it is n natural sequence that when the capabilities of the graduates become known, the school will receive many applications for their services, as is already the case with other of Philadelphia's special schools.

The relations of the graduates to the existing trades unions is another matter that will be left largely, if not wholly, to the graduates and unions themselves.

The system is handicapped somewhat by the lack of space, but when one considers the progress made in this short space of time, one is amazed, and naturally sanguine of the future success.

The school committee having the matter in charge is composed of Mr. William McIntyre, chairman; Mr. Murrell Dobbins, Mr. William Rowen, Mr. William F. Harrity, Mr. Edwin Wolf.

Faculty—William H. Odenatt, principal; Wm. N. Miller, James M. Harvey, Wm. F. Ingham, Wm. H. Balls, Isaac Feinberg, Ralph B. Yonker, Albert Gentel, Thos. C. Van Ostand, Wm. P. Schofield, Alfred J. Rudolph, Geo. F. Paul, Thomas Harkness, Geo. Astley, Bardsley Wood, Octavius A. Law, S. Henry Leo, Walter H. Tinney, Robert H. Price.

What an opportunity was afforded the observer to study humanity in some of its phrases. Here, by the side of the heavy-featured man, stood the boy, with gentle features, and we can readily imagine that which we are told, that for four different nights he has arrived at the school without having indulged in any supper. Think of a growing boy depriving himself of food in order that he shall be on time to imbibe knowledge. Is any time or effort spent on that boy wasted? Certainly, he deserves all encouragement possible, for undoubtedly that boy "will arrive." Directly in front of us—standing at the carpenter's bench—was a florid-headed youth, gazing through spectacles, at a block on which he is working. The first night of his instruction, the instructor directed him to change the measurements of a block of wood, reduce it to a certain size. The youth surveyed it silently, then remarked, "How in h— am I to do it?" Immediately recollecting himself, he turned with an apology to his instructor. "Excuse me, I thought I was home."

Hard on the home, but that boy is making great headway. Well, we certainly wish the school, the project and the pupils, hearty success. Any man or boy, who is ready to study at night, after a hard day's work, deserves all the good that can accrue therefrom.

Now, with a Merry Christmas and Happy New Year to all, we close the year 1906. M. E. Lockington.

Written for The Clay-Worker.

INSTRUCTIONS FOR INSPECTORS OF SEWER PIPE.

THE INSPECTOR shall examine each and every pipe, and test each by ringing for transportation cracks, standing them on end when necessary to obtain the right ring. The pipe and specials shall conform to the following requirements. Whenever the inspector is in doubt as to the advisability of accepting or rejecting any pipe or special, he shall have it placed in a pile separate from the accepted or rejected pipe, and the pipe in this pile will be examined by the engineer.

Allowable Eccentricity.

Size of pipe.	Shortest diameter.	Longest diamter.	Excess of long over short diameter.
5-inch	.... 4¾ inches	5¼ inches	¼ inch
6-inch	.... 5¾ inches	6¼ inches	¼ inch
8-inch	.... 7¾ inches	8¼ inches	¼ inch
10-inch	.... 9¾ inches	10¼ inches	⅜ inch
12-inch	............11⅝ inches	12⅜ inches	½ inch
15-inch	............14⅝ inches	15⅜ inches	⅝ inch
18-inch	............17½ inches	18½ inches	¾ inch
20-inch	............19½ inches	20½ inches	⅞ inch
24-inch	............23½ inches	24½ inches	1 inch

The above eccentricity will be allowed in individual pipes and specials. Not more than 33 per cent. of the number of pieces in each lot or shipment shall exhibit this degree of eccentricity.

Allowable Longitudinal Curvation.

No pipe or special shall depart from a straight line or the true curve longitudinally more than three-eighths of an inch, and not more than 23 per cent. of the number of pieces in each lot or shipment shall exhibit this amount of deflection. Pipes and specials shall not have angles, sharp curves or flat places, except where rendered necessary by the junction of the branches. The spigot ends and shoulders of sockets shall be fairly true and even and free from bunches except the pieces used to hold them up in the kilns, and which may be easily chipped off without injuring the pipes.

Fire Cracks.

Single fire cracks shall not exceed the following dimensions:

Extent of crack in relation to thickness of shell.	Longitudinal in spigot.	Cracks in socket.
Through entire thickness of shell...	2 inches	1 inch
Through ⅔ thickness of shell........	4 inches	4 inches
Through ½ thickness of shell.......	6 inches	6 inches
Through less than ½ thickness shell.	8 inches	8 inches

Transverse cracks shall not be greater than one-third the thickness of the shell of pipe, nor longer than one-sixth of the circumference. No fire cracks of any description shall be more than one-eighth inch wide at its widest point. Two or more fire cracks of any of the above classes in a single pipe or special shall be cause for its rejection.

No combination of any of the above classes of cracks in a single pipe or special will be allowed except by the express order of the engineer after a critical examination to discover if the combination endangers the pipe no more than a single crack would do.

Transportation Cracks, Etc.

If any pipe or special is found to be cracked through its whole thickness from any cause except through burning in the kiln, it shall be immediately rejected regardless of the extent of the crack.

Breakage.

If a piece is broken out of the socket of a pipe without injuring the body of the pipe, the pipe shall be rejected if the gap left in the socket exceeds one-tenth of the circumference of the socket. It shall also be rejected if the said gap is in such a position that it can not be placed in the top of the sewer when the pipe or special is laid. At least 90 per cent. of the whole number of pieces in each lot or shipment shall be free from this class of breakage. All other broken pipes shall be rejected.

Lumps or Blisters on the Interior of Pipes.

All pipes or specials having lumps or blisters on the interior surfaces of sufficient size and number to appreciably obstruct the free flow of sewage shall be rejected. A few small unbroken blisters not exceeding one-fourth of an inch in height or two inches in diameter need not cause rejection. A broken blister or flake on the interior surface which is thicker than one-sixth of the thickness of the pipe, or larger in any dimension than one-twelfth of the inner circumference of the pipe shall cause rejection of the pipe or special. Broken blisters or flakes of the above size or smaller shall cause rejection if the pipe or special can not be so laid that the blister shall be in the top of the sewer.

Outside Lumps or Blisters.

Irregular lumps or small unbroken blisters on the outside of a pipe or special need not cause rejection. Broken blisters or flakes thicker than one-sixth of the thickness of the pipe. or greater in any dimension than one-tenth the outer circumference of the pipe, and also any broken blisters or flakes which can not be laid to come on the upper side of the sewer shall cause pipe or special to be rejected.

Improper Material or Burning.

Any pipe or special which betrays any manner of imperfect vitrification or fusion or the use of improper materials or methods in manufacture, shall be rejected. Inspectors shall carefully inspect the material exposed to view in a broken pipe, by blisters or flakes, and at the ends of a spigot.

Interior Finish of Pipes and Specials.

The interior surfaces shall be smooth, even and well glazed throughout, and free from all defects but those specially mentioned and admitted above.

Yours respectfully, FREEMAN C. COFFIN,
Civil and Hydraulic Engr., 58 State St., Boston, Mass.

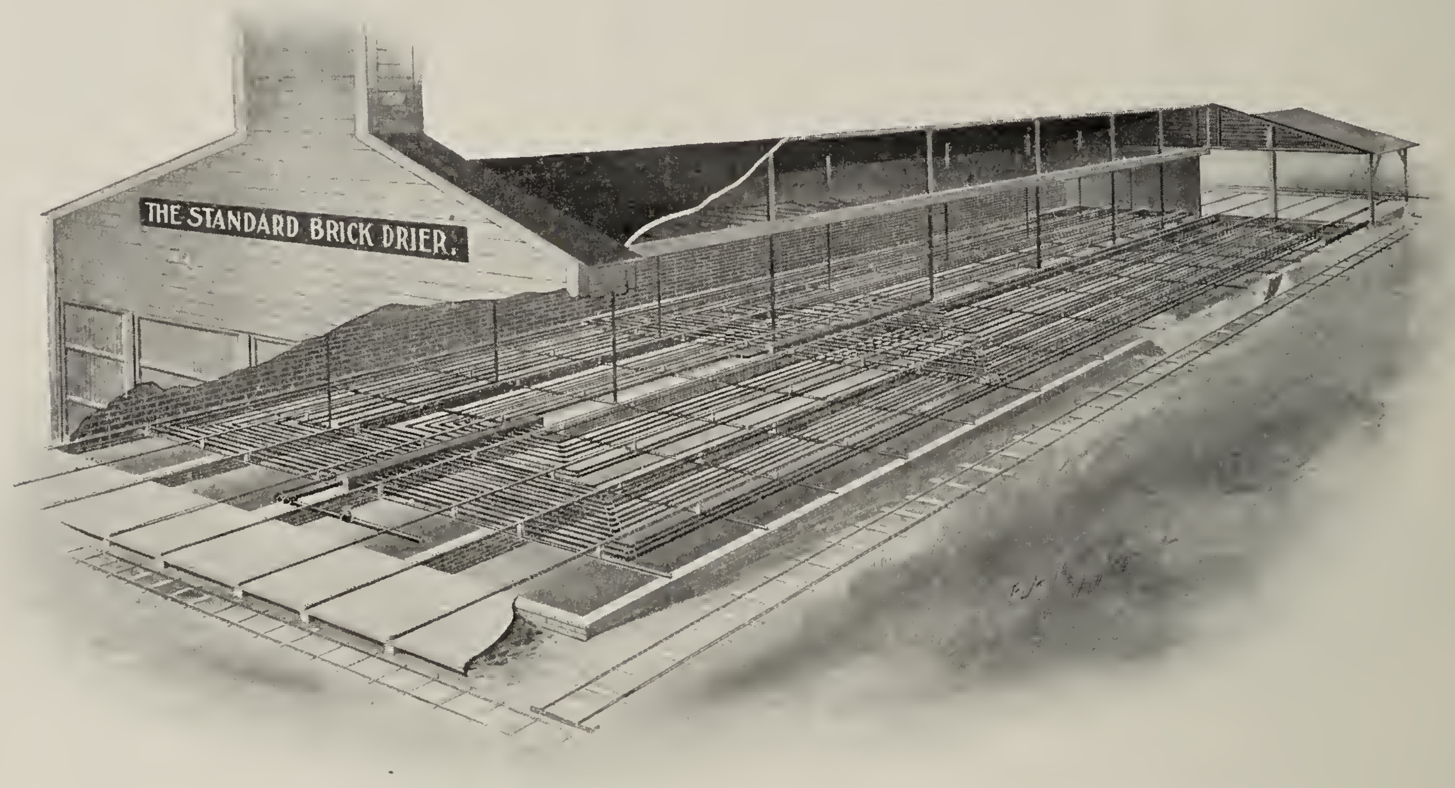
EXHAUST STEAM FOR DRYING.

How It Can Be Made to Make Money for You.

OLD PHIL ARMOUR used to say that he made his money by getting everything out of a pig except the squeal. Many a good butcher today is not making all the money he might be making, and the reason very likely is because he is throwing away some of the "pig" which could just as well as not be turned into crisp dollar bills. One important part of the "pig" that is now going to waste in many an otherwise up-to-date brickyard is the exhaust steam. And quite a few brickmakers who pride themselves on utilizing their exhaust steam are not deriving the maximum benefit from this source, for the reason that their drying equipment is not as effective for this purpose as it might be.

When old Phil Armour saw a way to turn a by-product of his packing plant into money, did he hestitate about installing the machinery and other equipment necessary to wring every possible penny out of the proposition If he had, he never would have become the possessor of more millions than the average man dares to dream about in his most optimistic moments.

The above thoughts are suggested by the recent announcement of a new heating system for the drying of brick and other clay products, which has been devised by Indianapolis people, and which is claimed to come pretty close to extracting every last cent's worth of value out of exhaust steam, as well as to cut down the cost of the dryer and its maintenance in other directions.


THE STANDARD BRICK DRIER.

New Heating System of the Standard Brick Dryer.

This new drying equipement, which is manufactured by the Standard Dry Kiln Company, is illustrated herewith. The manufacturers state that it is the culmination of a series of improvements they have been making in their Standard Brick and Tile Dryer.

Not only is the new heating system claimed to possess a maximum of effectiveness in utilizing exhaust steam for drying all varieties of clay, but it is further stated to have other important advantages not found in any other drying system on the market. All of these improvements tend toward increased simplicity of construction and arrangement, and reduction of the cost of equipment and operation.

One of the claims made is that the new Standard heating system has fewer manifolds and steam joints than any other make. All piping is on one level, which makes it unnecessary to do any excavating in order to install the equipment. Another strong point is that any pipe or fitting can be removed and replaced if necessary, without disturbing any other pipe.

Northwestern National Bank, Sioux City, Iowa.

Clay Bank Lower Brick Company, Sioux City, Iowa.

The accompanying cut shows how the novel arrangement of the heating system makes it adaptable to suit the requirements of the various kinds of clay, from the toughest to the tenderest. Another argument made in its favor is that the entire heating surface is right where it will do the utmost good. As shown in the cut, the system rests completely upon steel cross-ties.

Any further particulars regarding the new system can be obtained by addressing the manufacturers, the Standard Dry Kiln Company, Indianapolis, Ind.

Written for THE CLAY-WORKER.

IOWA'S CONVENTION CITY.

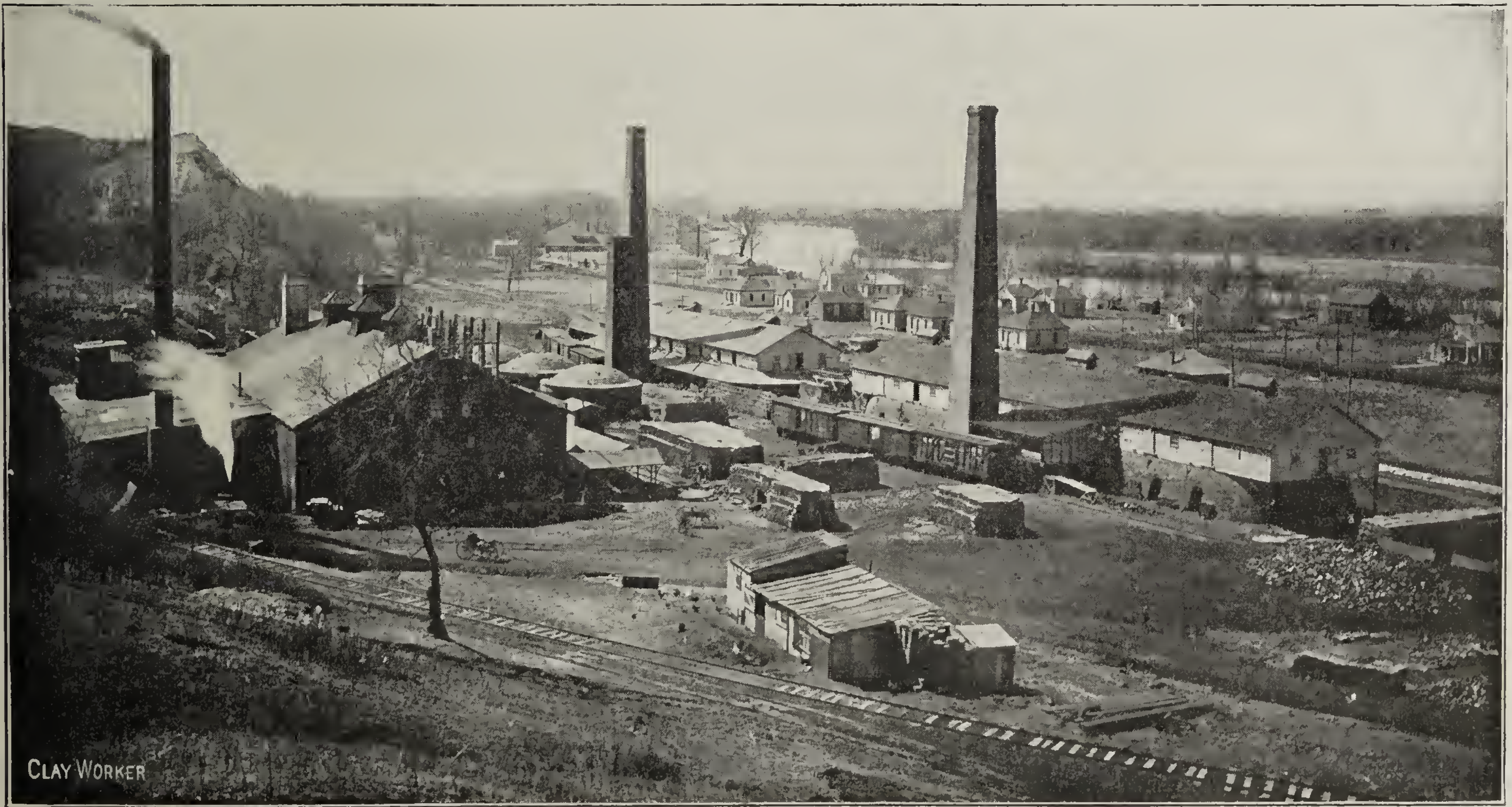
Sioux City and Its Attractions—The Brick Plants that Will be Visited by Clayworkers Who Meet There January 9 and 10.

WESTWARD HO! is now the slogan of the clayworkers of the Hawkeye State. At any rate, they could not have gone farther west and kept within the borders of their own State. Sioux City is located on the east bank of the Missouri river, at the mouth of the Big Sioux, and is a city of 50,000 souls, every one of whom, so one who knows declares, is a hustler. Hence, the city is noted for its enterprise, and also as a railroad and manufacturing center. The local manufacturers are urgently cordial in their invitation to the clayworkers of the Northwest to participate in the deliberations and festivities of convention week, and it is anticipated that a large attendance will result. Those who do participate will certainly be well entertained.

The city has well paved streets, excellent street car facilities and amusement places galore. Two years ago it was devastated by a dreadful conflagration that swept away many of its important commercial structures and caused a loss of more than $2,000,000. Today the city stands rebuilt, the better for the experience, a number of fine modern buildings having been erected in the burned district. We illustrate one of them, the Northwestern National Bank Building, that our readers may see how up-to-date Sioux City is.

The Lower Brick Company's Plant.

To the visiting clayworkers, undoubtedly Sioux City's brick plants will be really the most interesting of her enter-

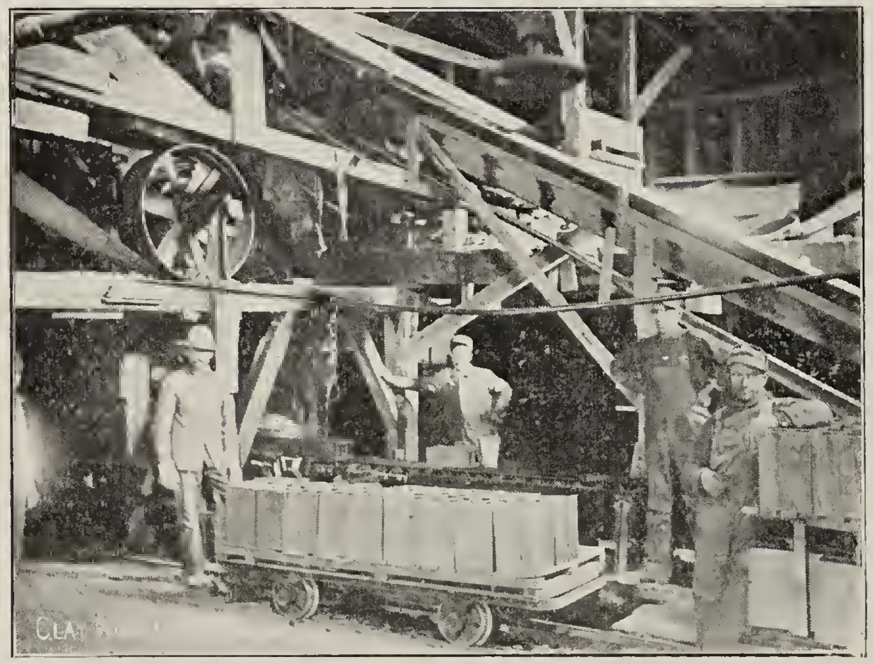


General View of Lower Brick Company's Plant, Sioux City, Iowa.

prises. The oldest of them is the Lower Brick Company's plant, which was established a score of years ago. It was built originally as a sewer pipe factory, and as such was operated for a number of years. In 1897 Mr. W. B. Lower, one of the ablest and most enterprising men of that section, purchased the plant and changed it into a paving brick, hollow block and tile factory. Five years later the plant was purchased by the present owners, Henry L. Little and E. N. Fairchild, both of Minneapolis, and G. N. Fairchild, of Sioux City. The plant has been enlarged and improved until at present it has an average daily capacity of 60,000 brick. The latter are burned in continuous kilns, of which they have two. The plant is located at North Riverside, an addition within the corporate limits of Sioux City, directly on the main line of the C., M. & St. P. railway, with connections to all the other roads centering there. The product of the plant, common building brick, hollow block and farm drain tile, is shipped to points in western Iowa, southern Minnesota, South Dakota, North Dakota and northern Nebraska. Fifty men are employed at the plant, which is operated the year round. Mr. G. N. Fairchild is Vice-President, Secretary and general manager, with main offices at 217-220 Little Building, Sioux City.

The Sioux City Paving Brick Company's Plant.

This company is another enterprise which owes its origin to Mr. W. B. Lower, by whom it was incorporated and established in 1885. He operated the plant until the fall of 1892, when it was purchased by the same parties who now own and control the Lower Brick Company. Here, too, will be found immense continuous kilns; they have three of them. The power is transmitted from the engine to the main shaft rope drive. The machinery equipment includes a Chambers brick machine of the largest size, with Chambers new No. 8 cutter, one No. 2 disintegrator, made by the same firm, and two iron frame 9-foot dry pans made by the Eagle Iron Works, of Des Moines. The average output is 90,000 brick per day, and the plant is equipped to run, rain or shine, right through the year, winter as well as summer. The plant has its own electric light plant and is equipped with steam dryer. Seventy-five men are employed and the work is carried on under the direct supervision of Mr. G. N. Fairchild.

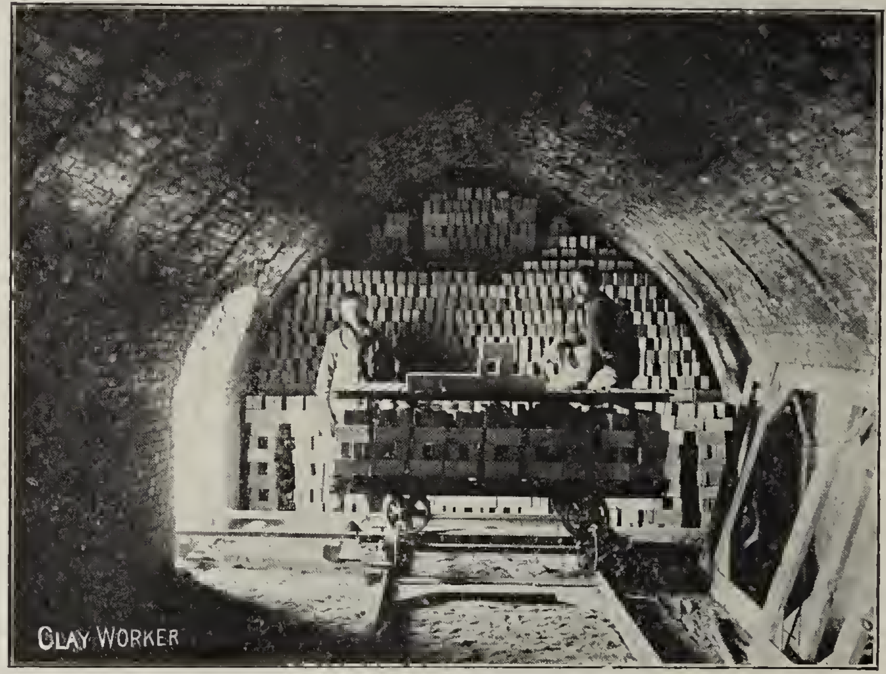


Making Hollow Tile, Lower Brick Company.

President Holman's Habitat.

Seven miles north of Sioux City is Sargent's Bluff, the home of C. J. Holman, a pioneer brickmaker of that section. who relates that the first brick made in northwest Iowa was made at Sargent's Bluff in 1857, and there is yet standing, and in good repair, a school house built of brick made in the same vicinity in 1861. Mr. Holman himself started in the brick business in 1866, and two years later put in the first horsepower brick machine used in that section, which gave way to a steam power machine in 1875, which in turn was supplanted by the first Chambers machine in that section, in 1891. Mr. Holman declares that he has never tried to make the greatest number of brick possible, but it has been his ambition to make the best brick possible, and those who use them say he does. He was a charter member of the N. B. M. A., being now one of the survivors of the first national convention, held in Cincinnati in 1886.

Mr. Holman now has an up-to-date, well equipped plant with a daily capacity of 50,000 vitrified brick. There is a ten-tunnel dryer, 80 feet in length, to which two more tunnels will be added. The brick are burned in Holman round down draft kilns, of which there are twelve, the major part of the product being fancy sidewalk brick and pavers and dark face brick. These and Holman pavers are shipped as far west as Caspar, Wyo., and Rapid City, S. D.



Setting Brick in Continuous Kiln, Lower Brick Company.

Taking Burned Brick from Continuous Kiln, Lower Brick Company.

Visitors will be given an opportunity of visiting these plants and also the immense stockyards and the great packing plants of Cudahy and Armour. The local Committee on Entertainment is composed of George Fairchild, Thomas Green, Jr., and C. D. Ritz. It is safe to predict that the reputation of Sioux City for hospitality is safe in their hands, and that those who attend the convention will have a busy, happy time. Headquarters will be at the Mondamon Hotel.

PROGRAM FOR IOWA CONVENTION.

A splendid program has been prepared by Secretary L. W. Denison for the coming meeting, which we give in full:

WEDNESDAY MORNING—10:30 O'CLOCK.

Enrollment of Members.

Appointment of Committees.

WEDNESDAY AFTERNOON—2:00 O'CLOCK.

Address of Welcome—W. G. Sears, Mayor of Sioux City.

Response—T. A. Randall, Indianapolis, Ind.

Annual Address by President—C. J. Holman, Sargents Bluff.

"Comparative Economies of Down Draft and Continuous Kilns"—G. W. Fairchild, Sioux City.

"How to Improve the Quality of One's Product and How to Make Such Improvement Pay"—F. E. Martin, New Sharon.

Banquet evening of the 9th.

THURSDAY MORNING—9:00 O'CLOCK.

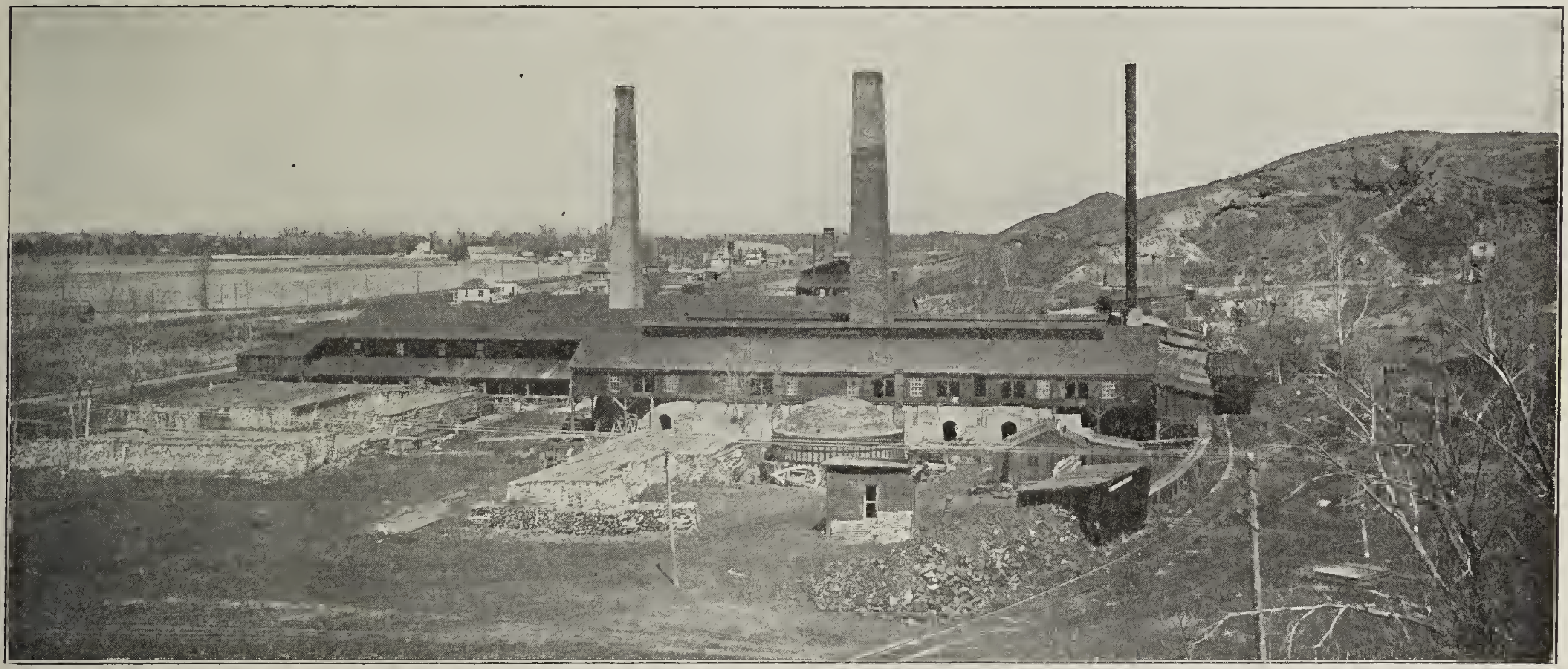
Roll Call of Members and Responses.

Report of Committees.

"Discounts, Breakages and Allowances"—C. B. Platt, Van Meter.

"The Systematization of Office Work"—C. F. Green, Sioux City.

C. J. Holman's Plant at Sargent's Bluff, Iowa.



Birdseye View of Plant of the Sioux Paving Brick Company

Shale Bank, Sioux Paving Brick Company.

"Is Producer Gas a Possible Factor in Clayworking Operations"—C. L. Smith, Mason City.

"The Insurance of Clayworking Plants"—G. H. Straight, Fonda.

"Farm Drainage"—Prof. A. Marston, Ames.

"Care of the Power Plant"—C. W. Ritz, Sioux City.

THURSDAY AFTERNOON.

Will be devoted to the inspection of the clayworking plants of Sioux City.

All topics of interest will be suggested and the fullest discussion of all papers and questions invited.

A cordial invitation has been extended to the Association by the packing interests of Sioux City to visit the packing plants, and it is hoped that all will avail themselves of this opportunity.

There are some men who sometimes think they hear the knock of opportunity, when it is really greed that is calling them.

Written for The Clay-Worker.

CONVENTION OF SAND-LIME BRICKMAKERS.

Third Annual Meeting of the National Association Manufacturers Sand-Lime Products, Held at Chicago, December 6, 7 and 8.

THE FIRST brickmakers' convention of the season was that of the sand-lime brick contingent, which gathered in one of the parlors of the Palmer House, Wednesday morning, December 5. The attendance was nearly up to that of last year, and the sessions were marked by the same earnest enthusiasm as has characterized this, the youngest of our organization of bricks.

President Squiers called the meeting to order, and after felicitating those present on again meeting together in a body, presented his annual address as follows:

PRESIDENT'S ADDRESS.

It is with a mingled feeling of pleasure and regret that I again call you to order and proceed to embody in a few words my greeting and my report, trusting the slight departure from the rule and precedent of our last convention will not be taken amiss as condensing the two into one will enable you and me to more quickly dispose of the least interesting part of our program.

The pleasure of meeting you all is something I greatly appreciate, especially those who attended either or both our former assemblies, and I believe that what will be developed by our concerted efforts will amply repay every earnest worker in the sand-lime product field, for not only maintaining a membership in this organization, but also for attending our annual gatherings, and that our common interest in this vocation will generate a bond of good fellowship that will be helpful.

It is also a pleasure to anticipate the handing of the gavel to my successor that new life and vigor may be infused into this body.

My regrets are many because of my shortcomings; what I intuitively felt a year ago has developed into the concrete, viz., that it would have been better if some one else had taken the reins at Detroit.

My offering to you today is so bare I am reminded of the two colored brothers who met, and one said to the other, "Good mo'nin', Mr. Jonsin." "Mo'nin', Mr. Jinkins." "How you feelin', Mr. Jonsin?" "Oh, I feelin' all right." "Then what make you look so kinda solemn-like?" "Mr. Jinkins, my trouble is family trouble; you see, that woman of mine, she botherin' me, she naggin' me, she naggin' me every day." "What she naggin' you about?" "She all the while askin' for money; yesterday mo'ning she asked for a dolla', this mo'ning she wanted two dolla's, tomorrow mo'ning she'll probably want two dolla's and a quarter." "My, my, Mr. Jonsin, what she do with all that money?" "I don't know, I never give her any."

My sins are those of omission rather than commission, and I am disappointed that I have not been able to contribute to the general good, or weave into the fabric of our work anything tangible. "But circumstance, that all-pervading atmosphere, wherein our spirits, like the unsteady lizard, take the tints that color, and the food that nurtures," has made it impossible for me to do what I had hoped.

The cause of part of this is due to the reflex of last year's efforts, and partly chargeable to you, as a whole. To be explicit, the officers, especially our Secretary, during the year 1905, or since, have not met with the ready response and co-operation expected and expenses incurred in endeavoring to develop the scientific, as well as the practical side of this business, did not find the ready response we anticipated when we made the slight draft on your individual coffers; consequently, we were not warranted in incurring further obligations which would have followed if plans we had in mind could have been unfolded.

Some one accused me of being a radical. Well, I admit it, but probably my conception of a radical differs from his, and my notion is best expressed by "Lents," who says: "What do we mean by radical? We mean a man who pulls things up by the roots and examines them, shakes off the dirt and looks at them as they actually are, strips them of all the rubbish of superstition and the prejudice handed down from the Dark Ages; handed down from the time when men believed in alchemy and branded chemistry as heresy; handed down by the benighted brain that never saw nor dreamed of an electric light."

Do not understand me to presume to arrogate to myself virtue or importance here, but I have not hesitated and will not hesitate to call a spade a spade and to make the point I have in mind plain, I shall not refrain from criticising any process or device that I believe faulty or unavailable because of fear of offending some one who may be engaged in exploiting some scheme or in selling systems, machinery or appliances and, for this reason, I was and am still of the opinion that the active members of this Association should be only manufacturers of sand-lime products.

A year ago I was convinced that the chemical end of this industry had been reached, but the evolution of a year causes me to falter and I have some doubts as to whether there are not other elements that will eventually enter into the composition of the future sand-lime products. I am convinced also that what has proven true in clay products will inevitably follow in this art and that is, that to produce uniformly a more even product, greater care must be exercised in preparing materials in order to obtain the efficiency of the machines employed, especially the presses, and that much that is charged to faulty mechanism is due to the improper conditions under which machines work.

It is said, "Progress springs from doubt and until men are dissatisfied with the present order, there is nothing better for them in the future." So with us, we must have a high standard and maintain it if we are to be truly successful in this industry.

Reiterating what I said a year ago, I believe we are lacking in mechanical devices and that the American genius has not been aroused to our necessities or that we have not been long enough in the manufacturing field to attract the careful, practical investigator and inventor to supply us with mechanism that is well adapted to our conditions.

As to whether successful plants will, in the future, adopt the use of hydrated lime, dry sand, and dry mixing, and the combined ingredients receive the water or steam just before it goes to press, or whether fine ground fresh lime be mingled with a portion of sand, pulverized in tube or other type of mills, then combined with more sand, wetted, stored in a silo and, when seasoned, conveyed to the press—is an open question

In a way, my company has been out of the main stream of progress. Unavoidable circumstances have necessitated the putting practically all of my energy into other branches of our business, but I am pleased to report that what attention our brick plant did receive was for the purpose of keeping it running to its capacity while we were obliged to decline orders amounting to several million brick. This state of affairs has prevented my keeping in touch with the various successful plants and I am, to a large extent, unaware of what has been developed.

Already our ranks are thinned and some have dropped by the wayside. It would be most remarkable if this industry should not undergo a weeding process, especially when so many plants were unfortunately started and it is to be regretted that men, who never made enough sand-lime brick to build a decent morgue, were able to interest capital to exploit so-called systems by presenting figures to show that sand-lime brick could be made for $3.00, and readily sold for from $6.00 to $10.00 per thousand. The seed was sown and brought forth fruit—dead sea fruit—disgusted, some have kissed their investment good-bye and turned their attention to other matters; some are hanging on, hoping; others stay because they can not let go; their all is at stake and they are fighting for an existence A few, who never thought the manufacture of sand-lime brick to be the royal road to fortune, are, so to speak, trudging up the hill, believing, by careful management, an ordinary manufacturer's profit is obtainable and a successful business can be developed. These are the ones who will ultimately reach the goal and from them will evolve the process and devices best adapted to our wants. Is our situation different at this time from other infant industries? I contend it is not and all who have the courage to stand by the ship and work consistently will eventually ride into port, gaining their reward. To the faint-hearted we say "good-bye"; to the stalwart "au revoir"; for surely we shall meet again.

Prices have been generally good, but labor in most localities has been a difficult factor to contend with, and I regret to say, oftentimes unreasonable and sometimes vicious and bad, and the contention with this element has about balanced the favorable market.

It is gratifying to learn that Fritz Pohlman, architect of the Minister of Public Works, of Germany, has, in the most emphatic terms, placed his seal of approval on our brick. He says: "The satisfactory experiments made with sand-lime brick have induced the administration of the state and cities to abandon their attitude which, for a long time, was unfavorable, and to use this material in numerous public constructions." The certification of the Royal Technical and Mechanical Institute of Germany is all that can be desired. The standing obtained in other countries is worthy of notice; in Canada, Montreal, Toronto and other cities approve the brick.

Death's sickle has not passed us by but has cut down one of our number. Although I met Mr. Frank E. Bond but once and only a few letters passed between us, he impressed me as being a man of sterling character, one whose friendship was worth having.

While endeavoring to take a conservative view of our condition today, we can safely say we have proven our worth and must be reckoned with as manufacturers of a building material that has been tried and not found wanting. The prejudice we encountered is dying out. All who have maintained a reasonable standard will find it easier in the future to market their product and I am sure our progress from now on will be steady and satisfactory.

The interchange of ideas that will follow the reading of the papers is the natural and logical way of getting at the facts. The deduction each individual makes from the experience of others will lessen his trials and more quickly enable him to reach the promised land. Therefore, let us be frank and admit our failures, explain any feature of this business we have been able to improve, or ideas we are prepared to advance, and when our new President pronounces the benediction, I hope every person present will feel he has been amply repaid for the effort made to attend this meeting and will be anxious to be present at our next convention, a year hence.

President Squiers called on the Secretary for his report, which we give in full.

SECRETARY'S ADDRESS.

We meet again after a year of successes and failures.

From the general report received, I am glad to see that it has been principally successes; perhaps not the successes financially that we had hoped to realize, or that we would have liked to have had. This feeling may be due in a large extent to the fact that a certain amount of dissatisfaction nearly always exists when we make a certain sum, for we feel that more might possibly have been made.

I feel satisfied, however, that we have much to congratulate ourselves upon.

First, by improving our product and our output, we are gradually forging ahead.

Second, a fact perhaps even more important, we are overcoming rapidly the prejudices of the public, for daily we are gaining customers who only a short time ago would not even listen to us.

Sand-lime brick has come to this country, and has come to stay. Every day it is becoming a more important factor in the building world. A year ago I was constantly receiving letters for suggestions and help in the introduction of sand-lime brick into new localities. These letters are becoming fewer, and I am, on the other hand, receiving more letters from various plants stating that they are full of orders and have been all the season. I know of several plants that have been so busy that they were not even able to accumulate stock during the winter season.

There have been a few failures, which is to be expected. There have been some discouragements, but that has been found also in all new industries.

Perhaps one of the greatest advances that has been made in the past two years since the organization of this Association is that of the improvement of the machinery. This is largely due to the energetic and sympathetic manner in which the machinery people have grasped the situation and have come to the rescue.

Still another important indication of development is that of the absence of the promoter. We hear less today of systems, patents, patentrights, etc., than we did two years ago; and I feel that the Association has done much to protect the innocent public from being robbed. One or two concerns that were very prominent in this method of promoting plants and selling patentrights have met their deserved doom and have fallen by the wayside. The concerns that have been more conservative, more honest, have reaped the results of their work, and, I am glad to say, are still with us.

The Association has not made the increase in membership which I would liked to have seen. This may be due to a number of causes; one of them, and the principal one, I believe, is a feeling that a mistake had been made in attempting secrecy.

Flash Light Picture Taken of the Delegates in the Convention Hall, Palmer House, Chicago. Dec. 6, 1906.

At the meeting last year, it was felt that the Association had gone to considerable expense in obtaining information which was valuable to its members, and that in order to defray the expenses it would be necessary to assess the members an amount above the dues sufficient to pay for the work. After considerable discussion it was decided that if the proceedings were sent broadcast it would be difficult to raise this money, as unfortunately many members would drop out and those who were not members would not see the necessity or desirability of becoming members if they secured all the information they wanted without paying for it. It was, therefore, decided not to publish the proceedings, but to have them bound in book form and furnished only to those members who paid their dues and assessments. It now appears that in the minds of a great many of the members, as well as outsiders, this was a mistake. That secrecy has cast a sad, mysterious cloud over the industry, and has been detrimental to the industry.

Personally, I do not agree with this view, as I can not see wherein secrecy in the Association, or its methods of producing the materials, should have any effect whatever upon the public who consumes the material. They are not interested in what we do in our Association, nor are they readers of the trade journals.

In order for the Association to be of any benefit to its members, it must accomplish certain results for the members.

First, it must help its members to decide what are the best machines to be used in the manufacture of the brick;

Second, it must help its members to decide what are the best methods to be adopted in the making of the brick;

Third, it must help its members to decide what arc the best methods to be adopted in placing those brick before the public and upon the market.

Many of us do not appreciate the value of science; therefore, we are not in sympathy with employing so-called experts to help us out. None of us are so expert ourselves, however, but that we can learn something from a scientist, and we can not expect men who give their time and lives to the study of science to do this for the love of us. Therefore, it is necessary for the Association to have money to make investigations and to employ assistance. In order that we may have all these things, the members of the Association must expect to contribute cheerfully and plentifully, for it is at this stage of the industry, when we are in the midst of development, that we need the most assistance

In a few years from now, when everything is running smoothly and we are all able to smile, we may not need an Association for any other purpose than to meet and congratulate one another and help spend the profits by taking a few days off.

View 1 of C. F. Kaul's Brick Plant, Madison, Neb.

I am not in sympathy with the man who came to the meeting last year and voted for the assessment and took up a lot of time by asking numerous questions and was given a great deal of information, which he acknowledged to me personally was invaluable to him, and when I sent him a bill for his dues and assessment, he at first ignored the bill and afterwards wrote me that he did not see the necessity of belonging to the Association, that it was not worth the money to him.

If we are willing and ready to stand together and help one another and are willing to contribute our pro rata share of the expenses (these expenses need not be more than we are ready and willing to vote that they should be), then I am heartily in favor of publicity of every nature and kind.

On the other hand, if it is expected that three or four should stand all the expenses and the others should reap the benefits, then I am decidedly opposed to publicity.

The report of the work accomplished by the Secretary is brief, and, I think, you will readily see the cause.

It was desired to make up a printed list of all the towns, giving the number of buildings and brick used, and distribute this list among the members; so that when the architects and builders asked, "Where are these bricks being used?" you could give them one of these lists.

I sent to each member a request to give me a list of the number of buildings in which their bricks had been used, the names of the towns, and the approximate number of bricks used. To this letter I received about six answers. So that project had to be abandoned.

Then, when I wrote to all the members, stating that if they would send me a fair sample of their bricks and sample of material which they were using in making the bricks, and tell me exactly the methods they used in the manufacture, the materials would be examined and analyzed and the bricks tested, and from this table would be made up a statement which would indicate what material and what method produced the best results.

This was all to be done without expense to the members or to the Association, except the trouble it would put them to in order to collect these materials, box them up, and the expense of the expressage. (Dr. Lazell had volunteered to do this work free of expense to the Association.) I received samples from so few, and some of these were sent "Collect," that it was useless to attempt to get any information which would be of much value.

All this would indicate that either you are satisfied with the results you are obtaining, or else you have no interest in the work that the Association is trying to accomplish.

I am a firm believer in the fact that we can not do much good if we do not attempt to carry out such ideas; it is just possible, however, that merely to meet once a year in a social way and talk over things in general, will be the more successful way of conducting the Association. In the latter event, there will be little or no expense connected with the Association. It would be decidely easier for the officers of the Association, as last year's meeting was voted an extremely strenuous one, and many of us were thoroughly exhausted from our efforts.

The Program Committee this year decided to have fewer papers and leave the time open for more discussion, more social intercourse. I would, therefore, suggest that if the program does not touch upon some points which the members would like to have discussed, that they call our attention to it in order that a time can be arranged for discussing such matters as have been omitted from the program.

Treasurer King next submitted a statement of receipts and disbursements, the former amounting to $1,896.61, and the latter $1,848.62, leaving a balance in the treasury of $47.99.

A number of able papers were presented, which will be published in our columns later on. The action of last year prohibiting the publication of the proceedings has been rescinded.

The Committee on the Revision of Constitution and By-Laws reported, recommending that the initiatory fee be $20.00 and the annual dues or renewal fee be $10.00.

The Election of Officers.

President Squiers declining a re-election, Secretary Duer was promoted to the presidency. Mr. Clark Mellen, of Colorado Springs, was elected Vice-President. Mr. Wm. King, of Cedar Rapids, Iowa, was re-elected Treasurer, and Mr. Harry de Joannis, of Chicago, was honored with the secretaryship.

It was voted unanimously to hold the next annual convention at Columbus, Ohio, Mr. J. Y. Bassell, secretary of the Board of Trade of that city, having told the convention of the advantages of the Ohio capital as a meeting place so eloquently that he carried the meeting by storm.

It is not always the man that works the hardest who accomplishes the most, but he usually thinks he deserves it just the same.

Written for The Clay-Worker.

A NEBRASKA BRICK PLANT.

SOMETHING like one hundred miles southwest from Sioux City, Iowa, which is one of the focal points for brickmakers just now, is the thrifty county-seat of Madison County, Neb., where Mr. C. F. Kaul established himself in the brickmaking business in 1884. "At that time," says Mr. Kaul, "the site of my present brick plant was blooming in prairie grass and sunflowers, the stalks of the latter being thicker than broom handles." Now, Mr. Kaul has a brick plant there in full swing, turning out 3,000,000 brick per annum, sometimes more. It is a summer yard and is operated usually from April to October only. The clay bed is about twenty feet in depth. Beneath the surface clay there is about ten feet of blue-black clay, which, when soaked with water, mixes very easily with the top clay soil and burns a good dark red. The clay is loaded on rail cars by a dumping wheel scraper. The cars are hauled to the clay house by a 100-foot endless wire cable. The clay is passed through a disintegrator and pug mill and into a Martin soft mud machine, on which all the common building brick are made. Their pavers and sidewalk brick are made on a Fate stiff mud machine, with side-cut board delivery table. The size of the brick are 8 x 3⅞ x 2½ inches. They are dried on the open yard on wooden pallets, the process usually requiring about six days. The common builders are burned in an ordinary up-draft kiln, and the pavers and sidewalk brick are burned in a continuous kiln, of which Mr. Kaul is himself the inventor.

View 2. C. F. Kaul's Brick Plant, Madison, Neb.

It is Mr. Kaul's intention to replace the common kiln with his improved continuous kiln the coming season, as he finds he can burn the brick cheaper and better both by his continuous process of firing. Slack coal is used. It costs $4.25 per ton. Mine run coal costs $6.00 per ton delivered at the plant. As the readers of The Clay-Worker will readily appreciate, fuel bills in that prairie country are formidable, so that it is necessary to use the most economical method of burning. Labor is high too, these times, and it is hard to get even at $2.00 to $3.00 per day for ten hours. While there is a good demand for brick locally, Mr. Kaul ships a good part of his output by rail over the Union Pacific Railroad, the plant having a siding which extends past the kilns. The track is in a cut, so the bottom of the car is on a level with the kiln floors.

The past season the price has ranged from $9.00 to $10.00 per thousand and Mr. Kaul says he thinks he will be able to attend both the Iowa convention at Sioux City and the National convention at St. Louis, where he will very cheerfully impart information on the Kaul system of burning, or any other feature of brickmaking, either on the convention floor, or in the lobby talks, as occasion will permit.

AFTER THE COFFIN TRUST.

Tom Watson is after the "Coffin Trust," "teeth and toenail," and has given it some pretty hot shots in his magazine for charging outrageous prices, the actual cost of which is very small. Here's part of what he says:

"Every day we can see these plain, cheap, and sometimes gaudy, coffins, which cannot by any sort of calculation be shown to have a greater value than a dozen or so dollars, sell for five times that amount. Why? Because the purchaser is helpless, and because the seller has no pity in his heart.

* * * * * *

"Thus, while other trusts exploit the living, the Coffin Trust exploits the dead. Against other trusts we have some chance to fight; our neighbors, kinsmen, friends will cheer us on in such a fight. Against the Coffin Trust we have no chance.

"So it is that the Coffin Trust has seized upon a coign of vantage which makes it irresistible. Heartbroken grief is to the Coffin Trust its securest ally. The tears and sobs of orphanhood bring gold to its coffers. The unreasoning devotion of the half-crazed husband or wife becomes an ally of as remorseless a robber of human beins as the world has ever seen.

"Ever since God fashioned the world and put the breath of life into man and woman, nothing has ever been known that was so insatiable, so heartless, so cruelly exacting as the Coffin Trust."

Let the good work go on, Thomas. There are maybe not many who are afflicted that will lend you active assistance, lest their purpose should be misunderstood, but you will have the thanks of the world at large if you can put a stop to this game, which frequently smacks largely of a holdup.

That the Stevenson Company's machinery is the best made is proven by the fact that one of the largest concerns in the world will turn down that made at home and buy Stevenson's. See page 688. —adv.

Written for The Clay-Worker.

BRICK PAVEMENTS GROWING IN POPULARITY IN VIRGINIA.

BRICK STREET paving is now coming to the front in sections where it was an unknown pavement a few years ago. In Tidewater Virginia towns and cities they are waking up to the fact that vitrified brick pavements are the best. Many handsome and durable streets are being laid with brick in Norfolk, Portsmouth, Old Point, Suffolk and many other near-by towns in Virginia and North Carolina. In the city of Portsmouth they laid vitrified brick ten years ago, and these streets proved so satisfactory to the taxpayers and city officials that they have practically used no other material there this year except brick, of which they have paved a number of streets in 1906. A few years ago they paved High street with asphalt, and they compared this street with the older streets paved with brick, and the verdict was "Vitrified Brick," though the cost for one of these jobs was about seven thousand dollars more for brick than for asphalt. The brick they used this year were the Mack block.

When the paving proposition came up in Suffolk, the bitulithic people seemed to have the "bull by the horns," and they had a pretty hot fight, the city council standing five for bitulithic and four for vitrified brick. It took a two-thirds vote to bond the town for the $120,000, to do the paving, so the four "bricks" said: "We will hold up the bond issue and not let you do any paving." Then they had hold of the same horns with a little tighter grip, which terminated in a compromise. The five "tars" agreed to give the four "bricks" one-half of the job. This was accepted and the four "bricks" wound up by getting nearly two-thirds of the job. They have completed West Washington street, about ten blocks in length, with "Maxwell" blocks, laid on six inches of concrete, two-inch sand cushion, with tar or pitch filler. Before grouting, the street was rolled with a three-ton steam roller; all brick inspected, and any defective brick were marked, all of which were taken out with tongs and good brick put in place of them. The tar was boiled in a large kettle and poured into the joints hot, from small-spouted cans; in this way the hot tar would run to the bottom of the brick, making a complete bond. With this method of grouting the expansion joints were unnecessary. After the grouting is completed they put on about a half-inch of sand, and immediately throw open the street for traffic. Since this street has been paved with brick a great change has come over some of the "Know-it-alls," who were so enthusiastic over bitulithic, or sheet asphalt, and had never seen a vitrified brick street, and I have heard a great many of them express their views before and after. Their after expressions are for brick. A majority of them say they only wish all of our streets were to be paved with brick. Any future paving to be done here will be brick. We have both pavements here, side by side, and a good fair chance to test them; laid at the same time and under the same weather conditions. The contract for the vitrified brick streets was let to the Southern Constructing Company, of Norfolk. Mr. E. J. Dewine is general manager of the paving in Suffolk. He is personally looking after the work and taking great pains to see that the work is done in the right way. He is an experienced man in the paving business, having spent many years in the paving business, in all kinds of paving materials all over the country.

Plowing Up Street Preparatory to Laying Brick Pavement.

Putting in the Concrete Foundation.

The four accompanying photos will show the construction work on this street. One showing the method of plowing up the street with a steam roller; another showing the concrete gang mixing by hand; another laying brick, and one grouting. They are pushing the work as rapidly as possible, and have a number of streets to pave yet, consisting of North Main, Bank, Pinner, Market and Saratoga; West Washington street has just been completed.

Laying the Brick on West Washington St., Suffolk, Va.

The bitulithic people have only two streets to pave, viz., South Main and East Washington. They have most of the concrete laid on these two streets, but have not surfaced any of them yet.

H. L. J.

Written for THE CLAY-WORKER.

NOTES FROM TIDEWATER VIRGINIA FOR THE CLAY-WORKER.

THE BARGE, "John R. Zimmerman," coming in from Baltimore, on November 28, loaded with brick for the Jamestown Exposition, in tow of the tug "Peerless," blew off her hatches at 5 o'clock in the morning and sank off Sewell's Point, in five fathoms of water. Barge and cargo will, it is believed, be a total loss. There was a thirty-six-mile-an-hour northwester blowing, accompanied by a heavy sea, when the "Peerless," towing the barges "Zimmerman" and "White Cloud," neared this port. Off Back river, the "Zimmerman," which was old, sprang a leak; the tug came on as fast as she could, and it began to look as though she would bring her crippled tow in. Between the gas buoy and black can buoy No. 3, just beyond Sewell's Point, the "Zimmerman" began to go down by the head; the tug tried to shove her into shallow water, but soon her hatches blew off with a thundering noise, and she went down, like a shot, in thirty feet of water. The tug men took her crew off before the barge sank. The "Zimmerman" is owned by Capt. Louis Moyer. She was built in 1893, and was valued at $3,000, for which amount, it is reported, she was insured. The cargo of brick is valued at $2,700.

In the United States court, at Greensboro, N. C., on October 29, a suit was instituted against the city of Greensboro, by Bynum & Ferguson, counsel for the Southern Paving and Construction Company, of Chattanooga, Tenn. The suit was brought to require payment of $13,000, the balance alleged to be due on the contract for putting down vitrified brick on Elm street. The city withheld the sum, after paying $20,000, claiming defective work and material.

A charter was granted on November 23 to the Reliance Brick Company, of Norfolk, Va. Capital stock, from $15,000 to $50,000. Officers: D. H. Hayden, President; I. B. Betts, Jr., Secretary; H. S. Elmes, Treasurer. Office, Norfolk, Va. They will manufacture brick and deal in real estate.

The brick plant of D. C. Harrell & Co., at Suffolk, Va., was sold at public auction on November 21. It was bought in by C. O. Harrell, one of the firm, for $8,500. C. O. Harrell will continue to operate the plant.

W. G. Williams and J. A. Williams, of Franklin, Va., have purchased a tract of clay land at Franklin, Va., and will build a new plant of 25,000 daily capacity. They expect to have the plant in running order by spring. They are in the market for new machinery.

E. W. Face & Son, brick manufacturers, of Norfolk, Va., who own large clay beds on the Nansemond river, near Suffolk, have a large dredging machine at work dredging a canal from the river through their clay bed, about a quarter of a mile. They will dredge this canal deep and wide enough to run their loaded clay barges through and save hauling the clay so far in cars to the river. They have their brick plant on the water front, in Norfolk, and barge their clay to the plant, a distance of about thirty miles. The improvement will cost several thousand dollars.

The Suffolk Clay Company, of Suffolk, Va., is putting in a new "Imperial" Fate side cut machine, of 50,000 daily capacity, instead of the "Hummer," of the same make, which they have had in continuous operation for seven years. They were so well pleased with the Fate machinery, after seven years' use, that they are installing one of larger capacity.

The Norfolk Brick Company have purchased a complete outfit from J. C. Steele & Sons, Statesville, N. C., consisting of their large No. 5, 100,000 capacity machine and automatic end cut rotary cutting table.

H. L. J.

The Completed Brick Pavement, Good for Twenty Years.

THE SLAVERY OF SUPERSTITION.

"There is no form of mental slavery so torturing as the slavery of superstition," says Lilian Bell in the December Delineator. "We are fond of relegating believers in it to the unenlightened, but few are the men and women today who are perfectly free from it in some shape. And after all, what does it amount to but fear? Fear of disappointment or disaster. We spend our lives in the shadow of a great fear.

"I feel no scorn for the victims of superstitions of whatever sort cherished, any more than I would feel contempt for the ill-treated child, which, when snatched from beatings to safety, flung up its tiny arms to guard its face from expected blows, at the slightest move on the part of its new-found friends. But my heart is wrung with the same sympathy for an unnecessary and inexplicable fear which is allowed to torture and make miserable lives which but for that would be mostly sunshine."

Written for The Clay-Worker.

CANADIAN CLAYWORKERS MEET.

Fifth Annual Convention of the Canadian Clay Product Manufacturers' Association, Held at Toronto, December 12th, 13th and 14th, 1906.

THE fifth annual convention of the Canadian Clay Products Manufacturers, held at Toronto, Ontario, was well attended, and the sessions thoroughly enjoyed by the members. Several very interesting papers were read and the discussions which followed brought out many good ideas. This organization is now in its fifth year, having grown from fifteen members to an association of nearly one hundred and fifty clay manufacturers, and though still in its infancy, it has been of much benefit to the Canadian clayworker. At present they are promoting the establishment of a clayworking department in the college at Kingston, and the work done with influential men in the Dominion by various committees during the past year has been so effective that in all probability a clayworking department will be added to one of the technical schools of Ontario in the very near future.

The delegates began to arrive Tuesday night, and by Wednesday noon, over one hundred had registered at the Secretary's office and been presented with neat badges and number buttons.

The exhibition room contained a number of interesting exhibits and was a general meeting place for the members. The largest exhibit was made by the American Clay Machinery Company, showing a number of small models of brick machines, press and cutting tables operated by electricity. Their end of the room was decorated with pamphlets and illustrations of the machinery that is "built right and runs right," and presided over by S. J. Heafield, who was kept very busy throughout the week. The J. D. Fate Company, Plymouth, Ohio, was ably represented by the secretary and treasurer of the company, Mr. George B. Drennan, who had a cordial greeting for every visitor. A. Berg & Sons had a good display and added to their popularity by distributing small pocketbooks and pretty blotting pads. The Bechtels exhibited their automatic cutting table and were represented by three members of the firm. O. Baird and Y. I. Hutchins looked after the interests of the H. C. Baird Company. The Barron Dryer Company was represented by A. F. Barron. The Twin City Oil Company had a small exhibit of oils, which was looked after by V. O. Phillips. In addition to these, several of the brick manufacturers exhibited samples of their ware.

The first session of the convention was called to order Wednesday afternoon, at 2:45, by President Fox, who introduced Alderman Graham, of Toronto, who welcomed the clayworkers in the absence of Mayor Coatsworth, who had been called away from the city on business. He cited the various points of interest in Toronto, and said that during the past year Toronto had turned over the keys of the city to thirty-seven conventions, none of which had less than one hundred and fifty in attendance. Mr. Graham eulogized the clay products, stating that he was an advocate of brick pavement, for he knew without a doubt it was the best pavement made, and gave as reason for the faith within him the fact that the first brick pavement in Toronto was laid eighteen years ago, and up to the present time had not cost the city a cent for repairs. He closed by assuring the delegates that he would instruct the police not to interfere with any one wearing the convention badge, either day or night. He was loudly applauded.

President Fox suggested that Mr. Graham be decorated with one of the badges, which met with the hearty approval of the convention. After the reading of a number of letters from absent members, the convention settled down to regular business.

President Fox delivered a brief but interesting address, telling the objects of the Association, and reviewing the program that had been prepared. The chief purpose of the convention, he said, was the interchanging of ideas for the advancement of brick and other burned clay products over all other building materials, and not for the regulation of prices. He urged the members to feel free to discuss all papers, and give information as well as absorb it, and announced that Dr. Pyne, Minister of Education of Ontario, had consented to talk at the banquet on the clayworking school project.

Mr. C. H. Bechtel, the Secretary-Treasurer, presented the following report:

SECRETARY'S ANNUAL REPORT.

To Members of the C. C. P. M.:

Gentlemen:—The last convention of the Canadian Clay Products Manufacturers was held in the city of Hamilton, on the 11th and 12th of December, 1905. The meeting was a successful one, the membership having increased from 69 firms to 101 firms, with 168 gentlemen present. A printed report, embodying the complete proceedings, was mailed you some time ago.

At the suggestion of Mr. Fox, the President of the Association, the following members of the Association met in Toronto during the month of February, for the purpose of asking the government to add a clayworking branch to one of the provincial schools. There were present Messrs. S. J. Fox, J. S. McCannell, J. B. Miller, Wm. Hancock, Wm. McCredie and C. H. Bechtel. They waited upon the Hon. Dr. Pyne and the Hon. Mr. Cochrane, and stated their views. The honorable gentlemen replied that the matter would be taken into consideration.

A meeting of the executive committee was held at the Rossin House on the 11th of November, 1906. There were present the President, the First and Third Vice-Presidents, Mr. Wm. McCredy of Lyons, Mr. B. E. Bechtel of Waterloo, Mr. H. de Joannis of Chicago, and the Secretary. The committee added Mr. Jos. Russell, of Toronto, to their body and that gentleman was present.

It was decided to hold a three-day convention on the 12th, 13th and 14th of December. A program was drafted. The Secretary was empowered to write Prof. Ed. Orton, of Ohio State University, Columbus, Ohio, asking him to deliver an address before the Association at this convention, and stating that the Association would be glad to pay his traveling expenses. Mr. Orton accepted and will deliver the address as per the program. Respectfully submitted,

C. H. Bechtel.

President S. J. Fox, Lindsay, Ont.

FINANCIAL STATEMENT.

Receipts—		
Membership fees		$198 00
Advertising in reports		75 00
Copies stenographer's report		10 00
Disbursements—		
Deficit from last year	$31 20	
Stenographer's report	46 00	
Printing reports, etc.	86 25	
Postage, stenographer's time, expenses and envelopes	28 82	
Bad debts—O. W. Shipman's "ad" in 1904 report	5 00	
Traveling expenses—C. H. Bechtel, $24.22; Wm. Hancock, $2.00; Wm. McCredy, $5.00	31 22	
One-half amount for badges 1906 convention.	13 70	
By balance	40 81	
Total	$283 00	$283 00
By balance		40 84

Toronto's Geological Status.

Prof. Coleman, of the School of Practical Science, Toronto, then made a most interesting address of the geological features of Toronto and Ontario, giving the history of the different formations used by clayworkers. He stated that thousands of years ago the country around Toronto was a shallow sea bottom, giving as his reasons for this statement the fact that remains of marine animals had been found embedded in the shales in the form of fossils with ripple markings, showing plainly that the sea must have been shallow in order to get these distinguishing marks. Fossils had also been found in the shales at Don Valley that were very ancient marine animals now extinct. He traced the formation of shale and clay through the two ice ages. The first ice age left two or three feet of boulder clay, or sole boulders, next to the shale. The period between the two ice ages had left the clays containing organic matter, showing that this period must have been characterized by a milder climate. He told of the effect of the glacial action on the country, and gave the reasons for the different stratifications.

Following the admirable address, the members took up the discussion of the old but ever new question of the whitewashing of clay products, and the causes of the different colors in clay.

Mr. J. S. McCannell, manager of the Milton Pressed Brick Company, of Milton, Ont., read the following paper:

MINING AND PREPARATION OF MATERIAL.

By J. S. McCannell, Milton, Ont.

In dealing with a subject of this description, it is not our intention to do more than mention a few of the many ways in which clay and like products are handled and prepared for manufacture. Hardly any two plants have the same way of preparing material, owing to the different formations and locations of the raw product.

In some European countries the material is taken from the beds of rivers. We read of the London brickmakers obtaining their supply of sand from the bottom of the river Thames, where it is raised into boats made for the purpose.

Vice-President J. S. McCannell, Milton, Ont.

The Dutch clinkers or paving bricks, which have been famous for centuries, are manufactured from the slime deposited by the river on its shores and at the bottom. This is collected by men in boats, who have long poles with a cutting circle of iron at the end, also a bag net with which they draw up the slime. This is mixed with sand to make the pavers.

The manner of taking material for brickmaking from the bottom of rivers and lakes with poles is not of modern origin, as will appear from the following inscription which stood upon the brick pyramid near Cairo, the translation being as follows: "Do not undervalue me by comparing me with the pyramids of stone, for I am better than they, as Jove exceeds the other Dieties. I am made from brick, from clay brought up from the bottom of the lake adhering to poles." So we see that the ancients realized that clay brick was then, as it is now, the best and most durable building material.

In getting the material out in its raw state a great deal depends upon its location as to how it can best be handled. A great deal of the soft clay must be dug out with a spade and handled in with horses and carts, if the haul is close, or if the distance is great, a track is usually laid and cars holding from a yard to a yard and a quarter are used. These may be hauled by a horse, or a cable may be used, attaching it to a drum and hauling the car up by means of power from the engine. Electricity may also be used for hauling up cars by means of a storage battery. This kind of power will, no doubt, be used extensively in the near future when we get properly hitched on to Niagara Falls, or use water power in our town counties.

Where the material is hard enough to blast, dynamite is used for blowing out the clay or shale, which is loaded on cars or carts by hand, or by means of a steam shovel.

In mining clay it is very important, if possible, to get natural drainage, so as to avoid the necessity of pumping out water in the wet season.

As you all know, in the treatment of clays there is a great deal of difference in the preparation for the machine. Some clays will go direct to the pug mill and others, having stones and impurities, must be put through separate machines for the removal of these impurities. In the case of our own material, which is almost all a shale, we put everything through our dry pans, which are five in number, before the clay is ready to go to the hoppers. In the case of the stiff mud bricks, we feed the dry clay, which has been first put through the dry pan, to our pug mill, where it is tempered to the proper stiffness before being made into bricks. With our dry press brick, the clay is tempered in the dry pan ready for going to the brick machines, by means of a small spray of water.

Another means by which the material is frequently brought in from the clay pit is by means of the aerial wire rope tramway. The system is used in several large plants. The wire rope over which the tramway buckets travel is supported by wooden towers. The buckets make a complete circuit of the tramway, the loaded buckets traveling from loading terminal to discharging terminal upon the wire cable, and after discharging its load the bucket continues around a terminal sheave wheel and proceeds upon a second track on the other side until near the loading station, where it is automatically detached from the traction rope by means of the automatic clip arrangement, and this clip passes on to the bucket just ahead, which has just been loaded, and picks this bucket up and carries it on in the same way as the preceding one.

A great deal has been said and written about weathering clay before it will make a good brick. This is something that actual tests alone can determine. Of course, some materials must be dried out before they can be ground up. Our own experience with our shale is that we can make a better brick direct from the bank than by any other way, owing to the fact that the moisture is more uniform when the clay is fresh than if it were partly dried out.

A steam drill is used in many plants for drilling the holes into which the dynamite charges are placed for blowing out the shale or clay. In our plant we use hand drills, which makes holes to the bottom of the beds which we wish to blow out. A dozen or more of these holes are exploded at once by means of an electric battery, and this will supply clay for several days' run.

We might add that while in tempering and preparing the raw material it is very important to have the water and clays mixed in the right proportions; this will not necessarily make good bricks. It requires to have mixed with it an experience and skill which is acquired only after using a good deal of that gray matter called "brains." (Applause.)

A long discussion followed Mr. McCannell's paper, after which a paper by A. Berg, on "Pressed Brick as a Building Material," was read by Mr. H. de Joannis, of Chicago.

PRESSED BRICK AS A BUILDING MATERIAL.

By A. Berg, Toronto, Ont.

It is said that the first man to discover the art of brickmaking was the nude savage of Bismayra, who, while poking among the ashes of his old camp fire, found that the moist clay beneath was baked. The first bricks were made from chunks of clay, roughly formed by the hands without a mold, and laid upon the ground without being baked. Thus, they were flat upon the bottom with low edges, rounded corners and a high convexed upper surface. To adopt a wooden mold resembling a bottomless box of the desired size, and to mix the clay with straw, was the next step. The only means in those days of distinguishing the different manufactures of brick were by putting grooves in the brick in different directions, each manufacturer having his own particular form.

In the present and future ages, we have and will continue to have a high grade of pressed brick for building purposes. It is oftentimes said that such and such a brick must be imported from the United States, because it is impossible to manufacture it here in this country. The allegation that the material is not here is nonsense; it is here in abundance. The clay deposits of this country are undoubtedly among the most extensive in the world. To take the best advantage of this, we must have the best knowledge of our resources and of their adaptabilities. The money is here, the brain is here, and the people with the highest grade of brick machinery are here, and we are convinced from our experience, that we can manufacture and produce as high grade of brick in this country as can be produced by any other nation in the world.

The writer has visited the most popular and modern brick plants throughout the world, and is thoroughly convinced that we have here every facility for making a high grade of pressed brick, with the most modern and successful brick machinery that can be obtained in this country; therefore, we do not hesitate to affirm that there is a future success for a high grade of pressed brick in Canada, which we venture to say comes from most of our plants without a peer in the pressed brick market, as we have strived to accomplish this end, together with the most brilliant fellow brickmakers.

Shale is exceptionally well adapted for a high grade of pressed brick; also adapted to allow the plant to be operated winter and summer, wet and dry weather, thus enabling us to keep our machinery in a condition that is unsurpassed for the manufacture of

F. J. Hutchins, Parkhill, Ont.
T. Henderson, Renfrew, Ont.
G. B. Drennan, Plymouth, Ohio.
W. H. Wood, Brockville, Ont.
Albert Neal, Seeley's Bay.
J. E. Randall, Indianapolis, Ind.
James Cornhill, Chatham, Ont.
William H. Elliott, Glenannan, Ont.
William Elliott, Glenannan, Ont.
T. M. Mulligan, Harbord, Ont.
F. J. Sullivan, Toronto, Ont.
Fred Miller, Toronto, Ont.
Jonas Cornell, Thedford, Ont.
William Freek, Barrie, Ont.
Charles Sawden, Toronto, Ont.
H. E. Reid, Barrie, Ont.
Auton Berg, Toronto, Ont.
John Berg, Toronto, Ont.
Severn Berg, Toronto, Ont.
J. S. McCannell, Milton, Ont.
G. W. Moody, Highgate, Ont.
A. M. Wickens, Toronto, Ont.
George Close, Stratford, Ont.
Harry de Joannis, Chicago, Ill.
C. W. Close, Stratford, Ont.
R. F. Ollmann, Hamilton, Ont.
A. Dowker, Ft. Frances, Ont.
D. B. Greig, Toronto, Ont.
E. Hooker, Welland, Ont.
Harry Cornhill, Chatham, Ont.
Fred Cornhill, Chatham, Ont.
W. McCredie, Lyons, Ont.
Neil McFee, Parkhill, Ont.
C. A. Gibbs, Parkhill, Ont.
B. E. Bechtcl, Waterloo, Ont.
Harry A. Cozzens, St. Catharines, Ont.
John B. Millar, Toronto, Ont.
V. O. Phillips, Berlin, Ont.
John Watson, Bracebridge, Ont.
George Frid, Hamilton, Ont.
Samuel Wright, Kincardine, Ont.
Samuel Wright, Chesley, Ont.
J. C. Wright, Proton, Ont.
George A. Norton, Carlton West, Ont.
Y. W. Norton, Carlton West, Ont.
George Angus, Toronto, Ont.
W. B. Bechtel, Waterloo, Ont.
James Irwin & Sons, Norwich, Ont.
E. J. Neal, Seeley's Bay, Ont.
William Adamson, Walkerton, Ont.
N. B. Card, Harrisburg, Ont.
Conrad Ott, Berlin. Ont.
Michael Ott. Berlin, Ont.
R. H. Hamley, Bowmanville, Ont.
Thomas Kennedy, Swansea, Ont.
F. Schaefer, Breslau, Ont.
George Schaefer, Hamburg, Ont.
C. G. Frank, Strathroy, Ont.
G. W. Packham, Weston, Ont.
E. J. Brown, Mt. Denis, Ont.
Joseph W. Brown, Mt. Denis, Ont.
Joseph Brown, Sr., Mt. Denis, Ont.
D. Martin, Thamesville, Ont.
A. W. Wright, Mimico, Ont.
J. W. Ball, Mimico, Ont.
William Hancock, Hamilton, Ont.
John King, Fruitland, Ont.
James M. Scott, Meaford, Ont.
Isaac Price, Toronto, Ont.
D. O. McKimmon, Toronto, Ont.
Mrs. C. H. Bechtel, Waterloo, Ont.
John Mouldey, Kingston, Ont.
G. Whittington, Napanee, Ont.
A. H. Merkley, Casselman, Ont.
F. S. Keith, Toronto, Ont.
M. Ryan, Fredericton, N. B.
J. R. Irwin, Waterford, Ont.
Hugh Cameron, Toronto.
A. H. Barron, Chicago, Ill.
L. H. Sinden, Tillsonburg, Ont.
A. W. E. Hellyer, Ottawa, Ont.
Mrs. S. J. Fox, Lindsay, Ont.
J. A. Lamond, London, Ont.
J. M. Govenlock, Winthrop, Ont.
R. G. Way, Trenton, Ont.
Alfred Deller, Norwich, Ont.
J. R. Milner, Windsor, Ont.
W. H. Frceborn, Brantford, Ont.
George Crain, Beamsville, Ont.
Mrs. G. Crain, Beamsville, Ont.
Prof. E. Orton, Jr., Columbus, Ohio.
W. Baillie, Montreal, Que.
F. R. Ollmann, Hamilton.
Charles Curtis, Peterboro.
J. F. Ollman, Berlin, Ont.
W. J. Packham, Brampton, Ont.
Hugh R. Irwin, Norwich, Ont.
Hy. Janes, Delaware, Ont.
William Roberts, St. Catharines, Ont.
J. M. Carter, St. Catharines, Ont.
W. E. Shantz, Berlin, Ont.
William Wright, Kincardine, Ont.
J. H. Morrison, Toronto, Ont.
John McBain, Toronto, Ont.
John Maloney, Toronto, Ont.
James Pears, Toronto, Ont.
William Pears, Toronto, Ont.
James H. Lamson, Toronto Junction, Ont.
L. B. Lamson, Toronto Junction, Ont.
D. Scott, Toronto, Ont.
R. F. Keaney, Toronto, Ont.
M. Wilson, Gladstone, Man.
H. Stevens, Portage, P. Q.
Ed. New, Hamilton, Ont.
John Crawford, Hamilton, Ont.
Frank Crawford, Hamilton, Ont.

Written for THE CLAY-WORKER.

BUTTON HOLE TALKS.

Little Willie of By-Gone Days.

THE TRAIN sped on. We, two travelers, were not in a private car, but in the smoking compartment of a regular Pullman, which we had bought for the night, we and some twenty other financiers. We had recklessly paid over our hard-earned shekels that we might, for a few hours, bask in this luxury and that the Pullman Company might swear to the assessor next spring and at the collector next winter, adding to their vault plethora, and after a year of multiplication have trouble with division with their stockholders at the year end.

We, the other traveler and I, were the only two who smoked, and, finally, when the other twenty odd had washed themselves in the diminutive bowls and had combed their hair with the company comb, and had gathered up their nether garments from the chairs and lounges, had quarreled with the porter, hidden their valuables, said their prayers, decided whether they would cover their feet or their shoulders with the regulation blankets, and had hunted for the elusive softer spot on the near-hair mattress, we two took possession of the smoking room and lit each his "torch." Some way we both felt chummy.

He was a swell in dress, important and distinguished looking, prosperous, evidently a Captain of Industry. I didn't need to introduce myself, for he told me at once that he had spotted me as a preacher the minute he set eyes on me. I didn't want to argue, so I let it go. It was easier and quicker. I could stand it if he could, and there was no one else there to question. It even pleased me, as it occurred to me that if I kept on fooling folks, happily I might finally end in fooling St. Peter himself.

It was a warm evening, and at every little station the inhabitants were out in force to see the train go by. We had the windows up and amused ourselves in studying the crowd. This time as the car stopped there was, standing clear in the light opposite my window, a sturdy little lad of about six, attired in a roundabout and pants "like mother used to make."

Instantly the burden of years rolled back and I was a boy again. Those pants worked the enchantment. I don't know where his mother got the pattern, and I don't know where my mother got the pattern, and I don't know whether there was any pattern. Certain it was, in my case, that I had nothing to do with the pattern, or the pattern with me. Indeed, the pattern wasn't so much after all. It was pretty much lost sight of in the subsequent treatment. She always ironed them flatways. Possibly it was easier, certainly it was effective; anyway, the consequence was that when her little Willie came to a gate, he sidestepped until the passage was effected. Of course, if it was a wagon gate, he didn't have to, but he knew his dimensions and whenever the obstruction was the size of an ordinary gate, or an alley, little Willie opposed the thin edge.

Nor did the flood of recollection stop there, but it brought back to him the time when those pants began to show wear at the knees, whereat the thrifty housewife sawed off the legs of the garments at a proper distance above the knees and transposed them, thus causing the unworn parts that had heretofore simply followed Willie, to take the wear and buffeting to which Willie subjected the onward portion of his anatomy. True it is, that this was, in a measure, confusing to the boy, and that at times he seemed just a bit uncertain as to whether he was coming or going, but the fact of the matter was that the boy knew that there was another portion of those pants that showed wear and he was in constant dread lest the pants milliner should discover the fact and make such a radical change in his apparel that he himself would never believe that his course was forward.

But leaving the pants—dropping, I had almost said—tearing away from them, if you please—I caught the clear blue, honest eye of the boy, and in recollection I went further back still, to the time the toddling Willie's world was very circumscribed. Shut into an acre of ground was his whole world. In it he was perfectly content, and out of it he had no desire to go. There was a little valley and a little hill, and oh, what a climb, what a perilous and adventurous climb for the little feet. When they told him that awful truth, that the world was round, then little Willie thought of that hill and just knew it couldn't help sticking up and making a bunch and spoiling the round proposition. He knew it was true that it was round, for his father said so, but how in the world, if the world was round, did they work in the hill and valley, that was so great a part of his world, into this round proposition?

Oh, Willie, big awkward Willie. Willie, with the sprinkling of gray and the growing wrinkles. True it is that your world has broadened and you have found out much more as to its dimensions, and much, yes, very much more, as to its bunches and rough spots, but as it has grown bigger, so have the bumps and rough spots and obstructions, and it isn't any rounder and smoother to you today, after all your practical experience with it, than it was to the little boy way back years ago, who was satisfied to take it on faith as round because of his implicit faith, trust and confidence in the statement of his father.

The train started and the little fellow gazed wistfully in at the window, looking earnestly at the Captain of Industry, and I knew well he was longing for the time when he could ride in a Pullman and smoke a sure-enough cigar, and I might as well confess to the longing that came to me to change back, past all the mistakes and worries and cares of all those years, and to be again the little Willie in the world of one acre, taking my information unquestioningly from those I knew I could trust, knowing nothing of deceit and craft, but everything of loving care and confidence—trusting all the time, coming, going or side-stepping. GATES.

OFFICIAL ANNOUNCEMENT.

THE TWENTY-FIRST NATIONAL CONVENTION TO BE HELD AT ST. LOUIS, MO., FEBRUARY 4 TO 16, 1907.

American Ceramic Society and National Paving Brick Manufacturers' Association Hold Separate Sessions February 4 and 5.

The Sessions of the N. B. M. A. Will Begin Wednesday Afternoon, February 6, and Continue Thursday and Friday, After Which the Time of Delegates Will Be Devoted to Visiting Clay Plants, Etc.

AT OUR LAST convention, we received a most cordial invitation to meet next year at St. Louis. The call came from the united clayworkers of that great clay center, and was so earnest, nay urgent, as to be well-nigh irresistible, and we now have pleasure in announcing that arrangements have been made for a meeting to be held there February 4 to 9, inclusive. As in former years, there will be a series of joint conventions. The American Ceramic Society will begin the week, with sessions Monday and Tuesday, and closing Wednesday forenoon. The National Paving Brick Manufacturers' Association will hold its sessions during the same days. The N. B. M. A. will hold its first session Wednesday afternoon and follow with one session each on Thursday and Friday forenoon, leaving the afternoons of those days for the inspection of clay plants and such other sightseeing as visitors may care to indulge in.

In determining to meet in St. Louis, we are influenced in a large measure by the fact that we have never before met in convention west of the Mississippi river, and also by the accessibility of that city from all quarters of the country. The late World's Fair proved conclusively that it is one of the most get-at-able cities on the continent, and we feel assured that this fact and the knowledge that the doors of every one of the great clay manufactories of St. Louis and vicinity will swing open to those who attend, will result in the largest convention in the history of the Association. In every way St. Louis is prepared to entertain and instruct visiting clayworkers who will find in the extensive clay plants, located in and about the city, a means of comparison in modern methods of manufacture that will prove of inestimable value. No city offers for the inspection and edification of our members a larger variety of clayworking industries. Her building brick, paving brick, fire brick, sewer pipe, terra cotta and other ceramic establishments are both extensive and modern in equipment and afford object lessons of importance in almost every branch of clay work. It is needless to say that our members, and those who accompany them, will be received and welcomed with open-handed cordiality, and that no effort will be spared to make the St. Louis convention a memorable event to every participant.

Hotel Headquarters—Reduced Railroad Rates—Exhibition Room, Etc., Etc.

Headquarters during the convention will be at the famous Planters Hotel, which offers special rates to delegates and those accompanying them. The convention hall and exhibition room will be on the parlor floor of the Planters, and those wishing to display sample brick or other clay wares, are requested to have them shipped, charges prepaid, direct to the hotel, marking packages for National Brick Makers' Association Convention. As in former years, reduced railroad rates have been granted on the certificate plan: That is, those paying full fare going and taking a certificate for same, will be sold return tickets at one-third the amount paid going, making a two-thirds rate for the round trip. These tickets will be good going from January 31st to February 6th, inclusive, and will be good returning up to and including February 13th.

Those desiring information as to the requisite of membership, or other details, are requested to communicate with the Secretary at Indianapolis.

THE EXECUTIVE COMMITTEE,
JOHN R. COPELAND, President.
THEO. A. RANDALL, Secretary.

CONVENTION DATES.

The convention season is at hand, and most of the associations have announced their dates, which we give below. Every clayworker should set his house in order and plan to attend his own State convention and the National convention as well. It will be time and money well spent. There is an inestimable advantage in meeting and comparing notes with those engaged in a common calling. In clayworking, as in other industries, the sum of the knowledge of many is much greater than the wisdom of the individual.

The Iowa Brick and Tile Association will hold its twenty-seventh annual convention at Sioux City, Iowa, January 9 and 10, 1907. Headquarters will be Mondamon Hotel. The program is given on a preceding page.

The Illinois Clayworkers' Association will hold its twenty-ninth annual convention at Champaign, Ill., January 22, 23 and 24, in the Elks' Auditorium. A good program has been arranged, including the annual banquet. On the afternoon of the 24th, the Clayworkers Institute will open a special ten day session for clayworkers at the Illinois State University. For full particulars as to the Institute, address Ross C. Purdy, Instructor in Ceramics, University of Illinois, Champaign.

The American Ceramic Society will hold its ninth annual meeting at St. Louis, Mo., February 4, 5 and 6, 1907. Headquarters will be Parlor C, Planters Hotel.

The National Association of Paving Brick Manufacturers will meet at St. Louis, Mo., February 5 and 6, 1907. The first session will be called to order Tuesday at 10 a. m., in Parlor B, Planters Hotel.

The National Brick Manufacturers' Association will hold its twenty-first annual convention at St. Louis, Mo., February 4 to 16, 1907. The deliberative sessions will be held, Wednesday, Thursday and Friday, the 6th, 7th and 8th. The balance of the time will be devoted to side trips, inspection of plants, etc.

Written for The Clay-Worker.

CLEVELAND BRICK NEWS.

CLEVELAND brick men are watching with interest the gyrations through which city officials are going these days in connection with the repairing of roadways which were opened up three months ago for the laying of a new 16-inch, high pressure fire service main. There still remain two or three streets in the central part of the city which are paved with asphalt, and these have become lovely specimens of modern mudholes since they were dug into. On top of all this is the grim realization that the city is in the grasp of the asphalt trust, for there is only one man in Cleveland who has any authority to repair the asphalt roadways.

A score or more of brick pavements were opened to receive the new fire mains, but were repaired speedily and promptly, usually within three or four days after the dirt was thrown in to settle. For three months the long mud trenches on the asphalt paved streets have remained open until the whole city is wrought up to a high tension over the disgrace. The newspapers have been writing scathing editorials, the councilmen have been denouncing it, and the brick pavement men have been sitting by and grinning gleefully over what they are going to do to the asphalt trust when the next bunch of paving bids come up for settlement. Charles Deckman and Spencer M. Duty, whenever they feel blue, simply go out on Erie street and look at the big holes in the asphalt pavement and promptly cheer up. It means business for them and for every other brick paving contractor in Cleveland.

The demand for clay products is slackening up somewhat because much of the building is nearing completion, preparatory to the cold weather. There are many contracts under way, however, and men will be kept at work until they are driven away by the storm king.

A great deal of new work is being planned for next season and the architects of the city have already started plans for several large structures. A 10-story skyscraper will be erected on East Prospect avenue, work to commence during the winter on excavating. The structure will be entirely of brick and cost half a million dollars. It will contain stores, offices, lodge rooms and an auditorium. A new West Side market house, to cost $350,000, is also being planned. Excavating will be started early in January. This is also to be of brick. Scores of apartments, dwellings and factories are being planned and an active season for 1907 seems assured.

A great deal of remodeling is being done in the down-town districts. Brick, as usual, is the material being used to face up old buildings and making them look like brand-new structures A new brick hospital on Carnegie avenue is already in course of erection and will be ready for occupancy early in the spring. It will cost about $100,000.

County Building Commissioner Eirick has commenced an investigation into the matter of employing county prisoners in making brick roads throughout Cuyahoga county. The county, under that plan, would purchase its own material from the big brick plants, and have the prisoners do the heavy work under the eyes of experienced men. Eirick is not of the opinion that it would pay the county to own its own brick plant.

The Brookside Brick Company, which was visited by fire several months ago, is rebuilding its plant on Ogden avenue, near Denison avenue. A one-story brick building, 65 by 84 feet, is being erected under contract. Active operations will be resumed at once in the making of brick.

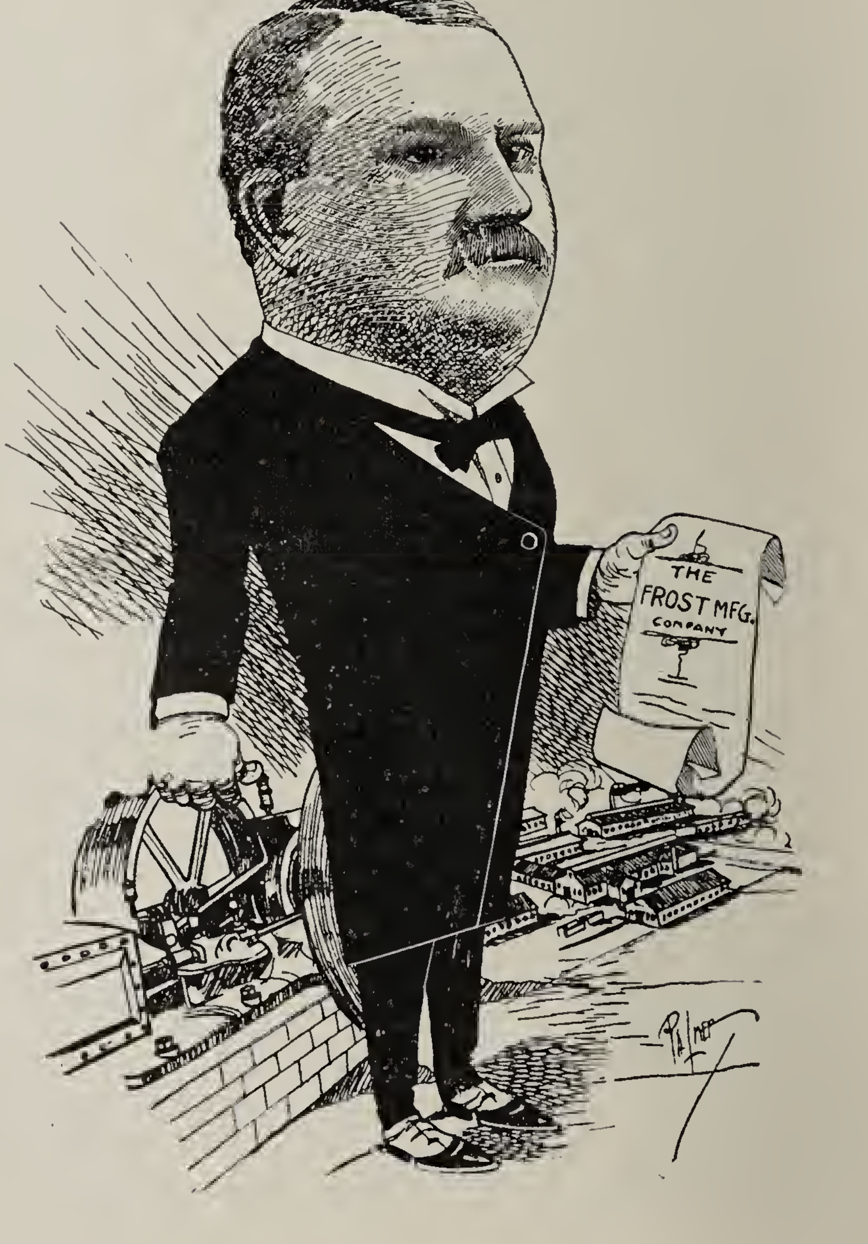
One of the first streets paved with brick in Cleveland was Jennings avenue, now West Fourteenth street. Twenty years ago the small wire cut brick were used. When they were taken up, a few weeks ago, to be replaced with the modern vitrified brick, some of them were found to be worn down to within half an inch of the foundation, but were still intact, showing the wearing quality of brick as compared with some other materials. The road was in comparatively good shape when repaved and much better than many of the asphalt streets one sees. There are a score or more of streets in Cleveland which have been paved with brick from fifteen to twenty years, which the city street department still consider too good to rip up and renew.

William H. Hunt, general manager of the Cleveland Hydraulic Pressed Brick Company, says that the season just passing has been the busiest one his concern has ever experienced. Mr. Hunt declares that never at any time has the capacity of his plant come near the demand made upon it. Now that business is slacking up the plant is just about even on the matter of getting out orders. It is expected that it will be kept running full blast all winter filling orders and stocking up for the spring demand, which will be heavy.

As far as known at this date, no plant is preparing to close for the winter, as is the usual custom. If the supply of gas is maintained in the kilns they will run all winter, stocking up for 1907. Buckeye.

THE PENALTY OF PROMINENCE.

UNDER the head of "Familiar Faces as Seen in Galesburg's Every Day Life," the Register of that city gives a character sketch of Andrew Harrington, secretary and treasurer of the Frost Manufacturing Company, known to the readers of The Clay-Worker in connection with Frost dry pans, engines and boilers, which we reproduce, believing it will be appreciated by "Andy's" host of friends in the clay trade. Mr. Harrington is a large man in more ways than one, and every ounce of his avoirdupois is redolent of geniality. His success in life is a source of gratification to all who know him. Incidentally, it may be remarked that the business of the Frost Manufacturing Company during the past season has been the largest in the history of the company. Their immense factory, in which is employed over three hundred workmen, has been run to its full capacity right through the year, and from present indications, will so continue.



Written for The Clay-Worker.

NEW YORK AND THE EAST.

THE BRICK SEASON for 1906 is virtually over and nearly all kilns are being closed for the season. A few are still burning as this is written, but as a whole the season is passed. And a very good season it has been. Perhaps no better season, taking all things into consideration, has been known in a number of years. Certainly not for the past five or six. There has been an active market for everything which has been made and prices have ruled high and strong throughout. The reduction which was made late in the summer was not because of competition of other building materials, but because other brickmakers were coming into the New York market and getting the cream of the trade. To save their business the Hudson River and Hackensack manufacturers thought it better to reduce their prices, thereby rendering distant competition impossible. The scheme worked and after that they had the New York market to themselves. The numerous dinners and chowders which the manufacturerers have given at the close of the season are indicative of the success which has attended their efforts during the year. They are well satisfied and are ready to take hold of next season's work with more enthusiasm than characterized their efforts this year. This was the third year of marked prosperity and sales have steadily increased. So great has been the demand that the higher prices which have been asked have not curtailed the trade a particle. The demand has exceeded the supply most of the season.

Prices about New York have remained strong and in some instances have shown an advancing tendency. Conditions are such that makers have been obliged to do some scraping in instances to fill their orders, and such a condition of affairs has a tendency to make prices stiff and high. At the close there is a good demand and business is being done upon the basis of previous prices, with the exception of one or two grades, which are a shade higher. The supply for the spring business occasions some concern. There will be a good long period after the snow goes next spring before brick will be easy for delivery. Whether there are sufficient brick in storage to satisfy the demand during that time is a question which can only be determined next spring. It is impossible to say now. Prices at this writing are: Front buffs, No. 1, $32.00; grays, shaded and speckled, $32.00; white, No. 1, $32.00; Hudson river, common, $7.00 to $7.50; light hard, $5.50 to $6.00; pale, $4.50; No. 1, fire American, $25.00; No. 2, fire American, $20.00; Scotch, $35.00.

Boston reports fair business at the close with prices ruling firm and with offerings considerably reduced. The upward tendency is marked, but the close of the extremely active demand has caused rather less improvement than might have been expected otherwise and prices are substantially as they were a month ago. Quotations are as follows: Up and Down s. s. brick, f. o. b. New Hampshire or Massachusetts yards, $7.75 to $8.25; Up and Down w. s. brick, $9.00 to $9.50; New Hampshire selected, f. o. b. cars New Hampshire, $12.00 to $13.00.

The Connecticut yards were very busy all the season, as has been previously pointed out. They are all closed now and the footing up process shows an output that ought to gratify any maker. For instance, the yards in Berlin and vicinity report a total output approximating 126,000,000, probably the largest in their history. It is said that others have done quite as well proportionately, though no others have given out definite figures. But the quantity produced at Berlin shows what success has attended the efforts of manufacturers in Connecticut all through the year.

At Middletown, Conn., the Tuttle Brick Company has added a new machine to its equipment, making four in all, which increases their output to 30,000,000 per year.

Dennis and Petzner, who recently purchased the D. J. Curtis yard at Hartford, Conn., are putting in a new machine and making other improvements in preparation for the spring business. All over Connecticut the outlook for business is remarkably good. Building projects are more numerous than ever before and there is a turning to brick in place of other building materials. It is thought to not only look better and more substantial, but to be more durable, and under present conditions, quite as cheap as wood or wood and cement or stone.

No figures have been given out by the Massachusetts manufacturers as yet. Probably as this is written they haven't their records compiled, but all reports from there unite in the statement that the season of 1906 has been the best ever known. The larger cities have been compelled to draw more liberally upon New Hampshire and Vermont than they ever did before, and the sale of Massachusetts brick has been more liberal and at better prices than ever characterized the trade before. Important improvements are planned to be ready for next season, and it is certain that the output will be materially increased. According to the opinions of well informed men, the increase will make no difference in the situation. Sales will be quite as liberal and at the close the supply left on hand will be found to be no larger than it is this fall.

Enthusiastic reports from Maine are of the same tenor as those from other sections of New England. The market has been remarkably good all the season, and now at the close there is little left to go over for the spring trade. Building operations and engineering operations in Maine have been extensive and have required steadily increasing quantities of brick for their satisfaction. In addition, Maine manufacturers have been requested to assist those in other states in supplying the demand for the immense quantities which have been needed in development of different projects in cities where engineering is being carried on upon a stupendous scale. Many Maine brick came to New York during the season, and other New England States contributed more or less to the requirement of the metropolis.

Deputy Sheriff Barnes, of New York, has received an attachment for $4,080 against the New York Granite Brick Company, of 114 Liberty Street, New York. The attachment was in favor of Harry H. Kutner on an assigned claim of the Chisholm, Boyd & White Company, of Chicago, for balance due on six brick presses. When the Sheriff went to the office to make the levy he was informed that Robert W. Lyle had been appointed receiver in Trenton, N. J. The company was incorporated in June, 1905, with a capital stock of $300,000, and bonds were issued for $150,000. The company bought considerable land at South River, N. J., and erected a large plant costing, it is said, $165,000.

Brickmakers along the Hackensack gave fervent thanks for a profitable season and will celebrate a very merry Christmas. The output for 1906 is estimated at 80,000,000, which is the largest ever known. The price at the opening was $11.00, and at the close it was $7.00 to $7.50. The quantity available for distribution in the early spring will be very light. One or two yards are still burning small quantities, but the output will not be materially increased by them. It is a positive fact that there will be no wolf howling around the door of these brickmakers this winter. Possibly they will be able to lay by a little something for the proverbial stormy day or to make improvements in their plants next season so as to increase their output.

The outlook for building operations in and about New York next season surpass that of this season. The great terminal works of the different railroads are progressing and will get to the point where brick will be wanted. And the quantities will be much larger than ever before, excepting when the contracts were made for the subways. There are some subway contracts to come on the market before long. Five additional ones have been approved and the construction will begin in a comparatively short time. The use of brick and other clay products in these subways has been and will be large. The builders depend largely upon brick for the material of which they are constructed. It is easier handled, it is more durable and it is better adapted for the requirements of this peculiar work than any other building material available. The sale will be large and the market promises to be good for the next few years.

BURTON.

Written for THE CLAY-WORKER.

KANSAS CITY BRICK AND BUILDING NEWS.

THIS HAS BEEN an active year in building operations in Kansas City, but there would have been a great deal more building if material had not been so high and so hard to get. Many buildings have not been undertaken because the capital was not willing to make such an expenditure for building material, and pay such high prices for labor. At the same time when the expenses of the average citizen is taken into consideration, it is apparent a good deal of the labor could hardly be expected to work at a cheaper price. Of course, all that capital thinks of is a reasonable prospect of getting a good interest on an investment which is safe, and if it can not be figured out in buildings in Kansas City, capital does not go in.

There would have been much more building this year, however, at present prices, if it had not been for the scarcity of brick and other building material. All through the summer and until early fall, there was a good many brick coming in from the gas belt every day, but even then the local dealers were kept busy all the time finding brick from the gas country. That supply is nearly cut off now, and the builders are depending largely on the local yards. There are plenty of brick for sale in the gas belt, while they were scarce last summer, but the yards are unable to make shipment on account of no freight cars. A number of yards are reporting that all their kilns are full, and they have shut down because it is impossible to move the brick out of the yards.

This car shortage seems to be general in all lines of business and in all parts of the country, and it is probable that the builders are really getting the light end of it, for their season is not nearly so brisk now as in a good many other lines; at the same time the brick men are complaining bitterly. According to all reports, the railroads' trouble seems to be more of a shortage of motive power than a shortage of cars, for cars are on the way an unreasonable length of time, eight or ten times as long as they should be, and in a good many cases even longer periods. They are thrown out on one siding after another, and the excuse offered by the transportation companies is that they have to take care of the perishable freight, and brick are not perishable and must wait for lighter trains.

The building permit was taken out the first week of this month for the new Bank of Commerce Building, which is to cost $1,200,000, be fifteen stories in height, cover a tract 160 x 113, and be ready for occupancy by March 1, 1908. This will be the largest building in the city, and will be right in the business center of the city, as far as retail business is concerned.

Several lots have been sold which lie directly across the street from this site, to the east, and a ten-story building is to be erected thereon just as soon as possible. This will make a considerable difference in the appearance of Walnut street, between Ninth and Tenth. The foundations are now going in for a building which will fill the entire vacant tract of ground lying just north of the new Long building, and that will make the block a solid one on Grand Avenue between Ninth and Tenth.

If the union depot location is ever finally settled, there will be a large amount of building contracted for right away; one builder estimates that at least a million dollars worth of building is being held up on account of the uncertainty about the location of the depot.

There appears to be a possibility of a fight in the council on letting paving contracts for both asphalt and bitulithic pavement, there being factions in favor of each. This seems to be a very good time for the brick men to get in their work and see if they cannot get some good paving down in the city once to show the people what a good, wearing pavement is like.

The building permits for the month of November fell away below the corresponding month of last year. There was 227 permits issued, the value of which was $496,810. This is a decrease of 133 in the number of permits, and of $277,180 in the value of the permits, as compared with the corresponding month in 1905.

Mr. Roll, of the Roll Brick Company, says that it takes a week to ten days to get a car of brick in from a plant not over one hundred miles from Kansas City, and when he does get them they usually come in bunches, so he has to pay demurrage on them before they are unloaded.

The vitrified paving brick plant which has been located in Humansville, Mo., is being moved to Clinton, Mo.

The Kansas City Vitrified Brick and Tile Company report that they are rapidly closing up their contracts for the year, and have had a good season, their sales only being limited by the output of the plant. They do not expect to close down this winter.

The Empire Brick and Gas Company, of Joplin, Mo., is putting in a new plant in New Albany, Kan. Their brick will not be on the market before next spring.

The Tyro Brick Company, of Tyro, Kan., is just ready to burn brick in its new plant.

The Dwyer Brick Company had a very severe fire loss recently, the loss including about everything about the plant that would burn. They are now looking for a new location to put in a larger and better plant than the old one ever was, and will use shale altogether. This plant has been operated by gas for some time, and they had a fine demand for their output, so the fire was quite a calamity to them for the time. They have two Boyd and one dry press brick machine for sale.

The Eadie Building Supply Company reports having just secured the agency for the Straitsville impervious fire brick, made in Straitsville, Ohio, and expects to have a good sale for them, owing to their great beauty, at the same time the freight rates are a big handicap to them in meeting competition.

Robert Nesch, president of the Pittsburg Brick Company, has the sympathy of the entire trade on account of the death of his eleven-year old boy, who was buried December 4.

The Eadie Building Supply Company reports having had a demand for more gas-burned brick than they could secure. Although their deliveries for November were two million brick, they could readily have disposed of double that quantity. They have just closed up a contract for over 500,000 grey vitrified brick for the new city hospital building, and these are to be manufactured by the Lawrence Vitrified Brick Company, of Lawrence, Kan.

The Coffeyville Vitrified Brick Company, of Coffeyville, Kan., is just closing up a fine year, their output being about 80,000,000. They will make some improvements this winter which will increase both the quality and volume of their product.

The Pittsburg Brick Company reports having shipped their old steam shovel from the Pittsburg plant to the Sycamore plant. This will give them a shovel at each plant. A number of new kilns are also to be built, both at Pittsburg and Sycamore.

The Buffalo Brick Company, of Buffalo, Kan., is getting ready to spend about $40,000 for improvements, such as additional kilns, improved appliances for drying brick, etc.

K. A. W.

CORRESPONDENCE.

THESE COLUMNS ARE OPEN TO ALL. THE FULL NAME AND ADDRESS IS REQUIRED, BUT WILL NOT BE PUBLISHED EXCEPT WHEN PERMISSION IS GIVEN. THOSE DESIRING TO COMMUNICATE PRIVATELY WITH ANY CORRESPONDENT WHOSE FULL NAME IS NOT GIVEN CAN DO SO BY ADDRESSING LETTERS CARE OF CLAY-WORKER.

Busy and Prosperous.

Editor The Clay-Worker:

Please excuse me for not sending my subscription to you before this. My only excuse is that I have been very busy. We installed a new soft mud machine, a Creager, made at New London, and this, with the operation of our dry press, has kept me very busy. Our brick are all sold in advance, and the past season we have sold the cheapest at $8.00 per thousand. Please find enclosed $3.00 for The Clay-Worker for another year and the fountain pen, which you offer with your paper. I would not do without The Clay-Worker. A. H. B.

Hamilton County, Ohio.

A Good Season for an Artificial Dryer.

Editor The Clay-Worker:

Your letter of September 30th received, and would have been answered more promptly had sickness not prevented.

Enclosed I hand you check for $2.00, amount due on subscription. Please continue to send your excellent paper; it invariably contains so much valuable information that I find it very helpful, in fact, almost indispensable to my business.

This has been the worst season ever. We have had rain almost the entire season, wages about twenty per cent. higher than last year, labor scarce, inferior and unreliable, with no increase in price of brick so far. I would say this was anything but a prosperous season. G. W. Alley.

Greensboro, N. C.

A Busy Season for One of the Faithful.

Friend Randall:—

I have just received yours with notice of the convention to be held at St. Louis, Feb. 6. Of course I expect to be there. I have been very busy the last year, having sold and used all the brick that I have made on my two plants. I am now putting in a dryer on the stiff mud out-door plant that I bought last winter.

In the building line I have been more than busy, although I have been running the open shop. After my bricklayers notified me a year ago that they would not work on any work where non-union men were employed, I was compelled to work the open shop, as I had some large contracts of that kind. I have built three bank buildings in this city this summer, besides several other buildings. One bank is complete, the other we are just setting the granite cap-stones, and the third, which is white press brick on four sides, we are now working on the eleventh story, which is terra cotta, and the prospects are good for finishing that in the next two weeks.

There has been a gentleman, representing the Bricklayers' and Masons' International Union, standing on the opposite side of the street from this building ever since the start, who said the building should not go up and has put forth every effort to stop it and annoy me, so you can imagine I have been a busy man the past year and expect to remain so for some years to come, but hope to always have time and the where-with to meet old friends at the annual convention.

Wilkesbarre, Pa. Geo. T. Dickover.

Hopkins, Missouri, Wants a Brick Yard.

Editor Clay-Worker:

We have a good, well settled country here, but no brick yard. Our brick cost $12.00 per thousand and come from Coffeyville, Kans. Eight miles south they make a mud brick about half burned, which sells for $7.00 and $8.00, and until the last three years we had that kind here. They sold for $8.00. Now if black mud will make a red brick, clay ought to make a better one, and we have a variety of clay from yellow to light grey. We have also a glacial clay.

We have no practical brick or tile maker here. Tile are made fifteen miles from here out of a yellow clay dug by the roadside. My object in asking for a copy of The Clay-Worker was to get an idea, if I could, of how to get a brick yard started here. I know nothing about the work myself, but would, with other citizens, help start one here. If we could interest a man who knew about clays and the kind of machinery to ut in, we might do something. The brick which have been made here were all sold, even the bats.

We have a town of a thousand population, two banks, brick stores, good farming community all around us and no land which is not improved. It is worth from $45 to $80 an acre. I do not see why we should not have something to help the town along and a brick yard would be one help. I see in The Clay-Worker you mention sand-lime brick. We have lime-stone in the ground in places near the surface, but don't know as that has anything to do with brick. There is undoubtedly some one who would go to work here if he knew of the situation, but just how to get him I do not know. We have a railroad through the town and plenty of water from wells, and a stream on the west edge of town.

Hopkins, Mo. A. D. Sargent.

Detroit Brick and Building News.

Editor The Clay-Worker:

Business has been unusually good with the brickmakers of Detroit this past month, and, from present indications, despite the fact that winter has set in, it would appear that the brick people will have all they can handle for some time to come. The present month closes the most prosperous year Detroit has ever had as regards building, and even now builders generally are predicting a much greater increase for 1907. The figures for 1906 are several million dollars in advance of 1905, and the work now planned, for which permits have been issued, will keep builders extremely busy for the balance of the winter.

With December a little more than half gone, the figures at the fire marshal's office show permits so far aggregating more than $1,500,000. This is made possible by the listing of the new Ford Building, a permit for which was taken out by C. H. Burnham & Co., the Chicago architects in charge. The dimensions of the structure, as recorded in the permit, call for 138 feet front on Griswold street, 110 feet on Congress, and a height of 248 feet, eighteen stories. The structural material is given as terra cotta, brick and steel.

Permits for the year have now reached the total of $13,000,000, and, with a week or more to go, $500,000 may be added to these figures for the year complete.

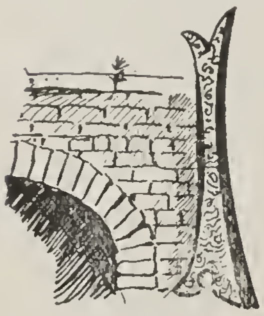
With business so good, there is still some complaint that Detroit brickmakers are selling their product at too low a figure, and many brickmakers believe that some move should be made to advance prices to some extent. However, such a movement has reached no actual status, although there is considerable talk along this line. Shippers are also universally complaining about the car shortage, which seems to have affected brick and terra cotta shipments as well as other lines.

It may be interesting to note that the city of Detroit this past year used more paving brick than ever before in its history, the actual figures being over 10,000,000. It is also interesting to note that paving work, under Commissioner Haarar, is farther advanced this year than heretofore and is now practically all completed. The city paving supply contractors were at the same time up against the car shortage problem, and, on November 1, one firm was about 500 cars behind in its orders for paving brick. Strange as it may seem, this has practically been made up now, leaving a clean field for 1907.

The question of a municipal brick plant is again being discussed by Detroit aldermen. Such a plant was proposed some time ago, but litigation later arose and nothing has been heard of it for some time. The Detroit corporation counsel, however, has been asked to report on the case and push the matter. WOLVERINE.

Written for THE CLAY-WORKER.

THE CHICAGO SITUATION.



IN THE WORLD of building, manufacture and sale of clay building materials of all kinds, manufacture and sale of clay machinery, in and about Chicago, all previous records have been broken during the year now drawing to a close.

Eight hundred million common building brick—count them (if you have time)—eight hundred million—will have been turned out by Chicago manufacturers by the close of December 31, according to estimates made by local common brick men, based on the figures obtainable on the 10th of this month. This is said by them to represent not only output, but output marketed. The total output, if these figures prove correct, and there is no reason to believe that they will not, will be somewhat in excess of this enormous amount, and indeed there are those who argue that the vast facilities for the manufacture of common brick in and about Chicago result in an overproduction even in such a year as we have just passed through. Common builders are closing the year at about $5 even, and the demand continues to be lively.

Fifty-five million face brick—count them, too, if the eight hundred million count hasn't pleased you—according to careful estimate, represents Chicago's best bow to the world, architecturally speaking, for the year 1906. This is the number of brick that have been put into structures in and about Chicago where ornamental and high finishes have been required for purposes of beauty or light. These figures mean that manufacturers have been kept busy with orders from Chicago, and that there has been a great demand for cars. The head of a large Chicago office who is in a position to know what an enormous traffic there has been in building material during the past months, said the other day that he would not be surprised if the need of cars for building material hauling might not have been responsible for the shortage of box cars acknowledged by most of the western roads and complained of by the grain shippers. This number of face brick represents an increase of nearly twenty per cent. over the figures of 1905 for this type of material

Fire proof men also report a most satisfactory year, far ahead of all previous records. The great amount of buildings using steel construction in the framework of course is responsible for their good fortune. The great skyscrapers in the downtown district have boomed this business and the general tendency toward safe, solid substantial work in buildings of any size erected in the outlying business centers have helped not a little.

It has also been a great year for the terra cotta people, and both the American and Northwestern companies report unprecedented demand for their goods. As in the other materials there has never been a year for terra cotta like the one just coming to a period. The increase in its use is not so much due to the fact that new uses have been discovered for it, as that the number of opportunities have increased with the great increase in the number of large buildings erected. The use of terra cotta now goes hand in hand with steel construction, and in a majority of the buildings put up this year has been employed to cloak the steel framework from the fourth or fifth story to the ornamental cornice. In speaking of the growth in this material during the year it is only fair to say that the American Terra Cotta Company's Teco ware has come during the year to be recognized more and more widely and authoritatively as a pottery ware of artistic worth and true merit. In advertising a display of domestic pottery during the autumn, Marshall Field & Co. ranked the Teco ware third, the celebrated Rookwood ware of Cincinnati being put at the head of the list.

The makers of roofing tile have had an excellent year also. Great strides have been made in this material and the adoption of the prismatic glass tile for skylights has marked a new era in the development of this product. In artistic effects consciously sought for there has also been progress.

Manufacturers of clayworking machinery in this part of the country will close the year with all records broken. The demand for material has been an invitation to capitalists large and small to enter the field and the plants already in operation were many of them obliged to enlarge, remodel and renew. This all played into the hand of the machinery manufacturer. Chisolm, Boyd & White, the Frost Manufacturing Company and the Chicago Brick Machinery Company all report excellent progress for the year and great prospects for the twelve months to come.

The drain tile people have not fallen behind for the year either, in spite of the efforts of the iron pipe producers to secure such legislation as would drive them out of the city field. In this section this material has been found exceedingly valuable in carrying long distance telephone wires across country through underground conduits instead of overhead. A large amount of this kind of work has been done along the North Shore.

Responsible for the prosperity of the clayworker and the material man, of course, is the unprecedented year in general building activities. Never, even during the world's fair year—or rather the year before—has Chicago seen such a building boom so well rounded and so generally indicative of prosperity as this year has been. Last year was good, and at its close the wish was generally expressed that 1906 might not fall below it. So far from doing that the increase has been enormous, as tables compiled from the building commissioner's statistics by your correspondent show.

For dealers, the year of 1906 has undoubtedly averaged considerably ahead of that of 1905. Most of them have found the past year the better of the two by from fifteen to twenty-five per cent. Those who have found it about the same, although no worse than 1905, say it would have been better had it been possible to get material shipped in as fast as it was demanded by the builders. More than one of the larger jobbing firms in the city have had to turn down orders of considerable size during the year just closing because they were sure they could not furnish the material in the time required by the buyers.

In spite of the rows concerning the local Board of Education, there has been a lot of school building going on this year, and there is every prospect of there being more of it the year that is approaching. Contracts of this kind are very kindly regarded by the trade and the chance of getting them is eagerly sought.

"Better a contract for one good school building than contracts for twenty-five apartment buildings of the ordinary six-apartment type," is the way one dealer in front brick phrased the idea.

For example, the ordinary apartment requires only 8,000 to 10,000 face brick, the sides and back being finished generally in common builders, since there is no need for ornamentation. The school buildings run in the neighborhood of 200,000 face brick, the finished material being used all about, or nearly so. One of the big public school buildings to be erected next year is the Lyman Trumbull School at Division and Sedgewick streets, in which 300,000 face brick are to be used. Bonner & Marshall Company secured this contract, and their Colonial paving brick will be employed.

One of the best advertisements for brick as a highly artistic building product that has been put up in Chicago during the year, is the new home of the Hyde Park branch of the Y. M. C. A. at the northwest corner of Madison avenue and Fifty-third street. The structure rises with showy though graceful lines, standing well back from the broad avenues that pass it, and the effective massing of the reddish browns against the lighter shades commands the attention of the eye the moment one gets in range of vision. The Danville brick, carefully sorted for shading, were furnished by the Thomas Moulding Company for this job.

Now, the question is, what of next year? There are many gigantic projects and many smaller ones on the tapis ready to be brought forward. The great railroad stations planned for the West Side are being urged and the City Council is expected soon to grant the necessary privileges. The management of the Corn Exchange National Bank is planning to begin May 1, next, the construction of a fine building at the northwest corner of La Salle and Adams streets to cost in the neighborhood of $1,500,000. Montgomery, Ward & Company's new quarters for the mail order establishment is to go right ahead. It will cover thirty-six acres. It will be of steel, tile and concrete construction and will have brick walls. It will be fireproof throughout. There will doubtless be considerable work during the winter on apartment buildings to be hurried to completion for the spring renting.

Whether the market opens with a rush of new work from the offices of the architects, however, seems at present to depend much on developments in the money market. At present, money is not very easy, and it is generally conceded that the stringency must relax if next year is to be a banner year for building. SCRIP.

Written for THE CLAY-WORKER.

ST. LOUIS BRICK AND BUILDING NEWS.

THE ST. LOUIS brick manufacturers report a good business being done at the brickyards. The weather has been against building operations for the past few weeks, and consequntly business just now is not quite as good as it was during the period when the weather was better. It looks as if there will be a good winter business if the weather permits. The prospects look now as if there was going to be a big spring trade.

Deliveries have not been as good recently as they were when the weather was favorable for building operations.

The valuation of buildings for which permits were issued in November, 1906, fell short of the record for the corresponding month of 1905, by $39,466. The last ten days of the month were very light from a building standpoint. The estimated cost of buildings projected last month was $2,351,071. The figures for November, 1905, were $2,390,500. The number of permits issued in each month were the same, 660. November was the first month of the year that building operations in St. Louis did not show a gain over the corresponding month of 1905. The Building Commissioners report of last month's work is as follows:

Brick Buildings.		
New brick.	1906.	1905.
Permits	225	206
Old brick.		
Permits	106	100
Frame Buildings.		
New frame.		
Permits	253	270
Old frame.		
Permits	76	84
Totals	660	660

Brick Buildings.		
New brick.	1906.	1905.
Estimated cost	$2,206.440	$2,088,135
Old brick.		
Estimated cost	81,586	226,085
Frame Buildings.		
New frame.		
Estimated cost	54,131	60,037
Old frame.		
Estimated cost	8,914	16,280
Totals	$2,351,071	$2,390,537

A meeting of the stockholders of the Columbia Clay Works will be held on the 19th of January for the purpose of increasing the capital stock of the company from $71,000 to $100,000 and to increase the number of directors from seven to nine.

The Hydraulic Press Brick Company has filed notice of increase of capital stock from $3,500,000 to $10,000,000. The assets are stated at $7,402,493.84 and the liabilities at $563,740.36.

The company has been arranging for several months to absorb formally all the subsidiary companies throughout the United States. These subsidiary companies have belonged to the Hydraulic Press Brick Company, but also have had separate identity. The increase of the capital stock is made to perfect the organization in accordance with the plan which puts the subsidiary concerns under direct control of the parent institution.

Twenty-five members of the St. Louis Architectural Club were the guests at a demonstration of pottery baking at the studio of Robert P. Bringhurst recently. They will participate in the ceramic sculpture contest for which Mr. Bringhurst has offered a prize.

The employes of the brick yard have always insisted on quitting work when the first cold snap comes and the new management has notified their men that if they do not continue their work this winter that men will be brought in to do the work and there will be no opening for them next spring.

The new management has already made extensive improvements on the plant and in the spring will erect a new one just south of the present site. They have many orders for brick ahead, and to keep up with their orders and have enough brick on hand to build a new plant next year it is necessary to run all winter, which they will do if it is possible.

THE ILLINOIS CLAYWORKERS INSTITUTE.

THE CERAMIC DEPARTMENT of the University of Illinois is offering a course of instruction, from January 25th to 31st, inclusive, free to all clayworkers. The course offered is of institute nature, the lectures being given by various men, who have made a special study of the subjects they will present. This Institute is undertaken at the instigation of the Illinois Clayworkers, but clayworkers from any of the other states will be welcomed.

The Illinois Clayworkers Association convenes in Champaign January 22, 23, 24, inclusive, and the A. C. S. and N. B. M. A. convene in St. Louis February 4th to 15th, so those who wish a full term of Ceramic instruction can very conveniently plan to attend this series of meetings at very little traveling expense.

At this Clayworkers' Institute, held under the auspices of the Ceramic Department of the University of Illinois, the lectures will be severely elementary and popular, as so to be within the mental range of any who may desire to attend. Effort is being made by the department to secure speakers of national repute to lecture on some of the particular phases of clayworking that have received their greatest attention and study.

The following course has been arranged for tentatively:

Geology—(1) Brief outline of the history of the earth with special discussion on the Paleogoic Age. Two lectures, illustrated by charts and lantern slides.
(2) Description of conditions during the glacial epochs with particular reference to the deposits made by the old glaciers. Two lectures, illustrated by charts and lantern slides.
Prof. C. W. Rolfe and Dr. W. S. Bailey.
Fuel— (1) The Origin of Coals. One lecture.
Dr. H. Foster Bain.
(2) Composition, fuel value and distribution of coals in Illinois, wtih special reference to the volatile constituents and their effect on clay wares. Two lectures, illustrated by charts.
Prof. S. W. Parr.
Heat—(1) Elementary description of kinds of heat, heat energy and generation. One lecture, illustrated by demonstration.
(2) Measurement of heat. One lecture, illustrated.
Dr. F. R. Watson.
Drying and Burning—To be arranged. Four lectures.
Clays—(1) Classification, uses and limitates. Two lectures.
(2) Clay testing. Laboratory experiments.
Ross C. Purdy.

THE CLAY-WORKER

Entered at the Indianapolis postoffice as second class matter.

A Practical Illustrated Monthly Magazine, devoted to Brickmaking and allied Clayworking Arts and Industries.

TWENTY-THIRD YEAR OF PUBLICATION.

OFFICIAL ORGAN OF THE NATIONAL BRICK MANUFACTURERS' ASSOCIATION OF THE UNITED STATES OF AMERICA.

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One copy, one year (in advance) - - - - - - - - - $ 2.00
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ADVERTISING RATES

Furnished on application. The CLAY-WORKER is unquestionably the most effective medium in its field, and character and circulation considered it is the cheapest. To insure insertion in current issue, advertising matter should be sent to office of publication on, or before the first of the month.

Correspondence on all subjects of interest to Clayworkers solicited. All communications should be addressed to

224 East Ohio St.] T. A. RANDALL & CO., Indianapolis.

Vol. XLVI. DECEMBER, 1906. No 6.

CURRENT COMMENT.

The Clay-Worker wishes its every reader a Merry Christmas and a Happy New Year.

* * *

Capital and labor are both getting along and climbing up rapidly—it is the salaried man that is doing the grunting these piping days.

* * *

Simplified spelling didn't live very long, but it got its full share of attention for the short period it did occupy a place in Washington official life.

* * *

One great handicap to efforts at currency reform is in the need of reforming some of those who handle big chunks of the country's financial power.

* * *

Don't hesitate about it because you are afraid you won't keep them; make all the good resolutions you want to—and keep as many of them as you can.

* * *

If the present prospects are realized, the New Year will indeed be a prosperous and happy one for our readers here at home, and we hope it may prove equally so for those abroad.

* * *

Cement can never supersede brick. It has not the elements of durability which make brick the best building material known. As a cheap substitute, cement may be used to some extent, but good, permanent buildings will never be built of cement.

* * *

If some of our magazines had more real interest in reform and less selfish purpose in creating strong sensation for the upbuilding of their own subscription lists, there would be more good done, and less room for counter attacks. Emphasis and eloquence are both good things and useful on occasions, but sound logic is better and will win more lasting victories in the end.

* * *

Clay products were never in greater demand the world over than at present, and we firmly believe 1907 will record a greater consumption of brick, tile, pottery and ceramic wares than ever before.

* * *

The President has a habit of hitting the bull's-eye every once in a while, and one center shot in his recent message was where he said the skilled workman can best become such by technical industrial education.

* * *

During the winter months it is time to plan and make preparation for the busy spring and summer seasons. And one of the best ways to get light and assistance on these subjects is to make one of those in attendance at the annual meeting.

* * *

A trade journal like THE CLAY-WORKER possesses unbounded beneficial influences and suggestions, but none of these can be imparted to others, unless they are wanted. Like everything else the benefits conferred by even so good a trade journal as the CLAY-WORKER must be reached for. The one benefitted must exert some effort. It is well to remember this when considering the value of trade papers.

* * *

Well, how about the season just closing? Has it not been as good as you could possibly desire? Have you not sold the products of your kilns as profitably as you could wish? Is not the outlook for the future as promising as you could desire? You should celebrate the holidays with more than ordinary pleasure. We hope every CLAY-WORKER reader may may do so, and incidentally wish to mention that this is a good time to renew subscription.

ANOTHER FATAL CONCRETE COLLAPSE.

And now another dreadful disaster has resulted from an attempt to build a large reinforced concrete structure. This time it was a hotel at Long Beach, near Los Angeles, Cal. The accident occurred while workmen were engaged at their tasks, and ten or more of them were killed almost instantly. Local papers declared that the scene at the wreck was appalling. Now, cement promoters and those enamored of the fad of concrete construction are explaining why and how it happened, and they will probably succeed in convincing those who are determined to experiment with this form of construction, regardless of the danger which such work involves, that it was a dispensation of Providence, but from our point of view it looks more like a visitation of the "Fool Killer."

THE CLOSING SEASON.

In most of the northern brick centers the last burning of the season has been finished, or is now being shipped, and makers are closing up their yards for the season. What a record of prosperity it has been! What a time for the sale of brick at profitable prices! What vistas of profitable possibility open ahead of the manufacturers for the season to come and the one to follow that. There never was a time in the history of the business when opportunities loomed so large or when the probabilities were so promising. Nothing can prevent a record year next season, excepting some business calamity, which is not indicated by present conditions, and certainly not expected. With all lines of business as active as they are now, with every city and town in the country developing more rapidly than ever before, the manufacturer of brick can live on velvet another year or two at any rate. Any business cataclysm which would injure business to any considerable degree could not come much under two years. Therefore, the thing to do is to lay away the profits of the past season where they will do the most good, and plan and strive for equally large returns next season.

OFF WITH THE OLD, ON WITH THE NEW.

With this issue, the Clay-Worker closes its twenty-third year, and this issue is itself visible evidence of rugged maturity and virile force. It is a fit finish for a year of diligent, effective labor in our chosen field. That clayworkers may well be proud of such a medium the pages of this issue attest. Our annual index, which we give with this number is a graphic demonstration of the thoroughness with which we have covered the entire field of clay-working. It shows that Volumes XLV and XLVI mark the same advance that we have made in previous years. Of all our twenty-three years of success, the one now closing was the most fruitful, and now as we face another year, the outlook seems most rosy. We will mark its advent by issuing a double or Anniversary number that will set a new standard of excellence, and which will alone be worth the price of the year's subscription. Now is the time to subscribe.

SANTA CONTINUES TO REIGN.

The searchlight of investigation which has been so industriously employed throughout the year has revealed weak spots in many of our institutions which were regarded by many as being impregnable, and has done a lot of what we might term wrecking of idols. Probably the idols were false ones and deserved to be wrecked, but that does not alter the fact of the wreckage or change the results, which creates suspicion in nearly everything and everybody. It was not merely a matter of unearthing political graft. Up in New York they have been jolting the insurance system, over in Missouri they are finding fault with the Standard Oil doctrine, down in Kentucky the Pure Food Commission has unearthed the Jim Jams from blended liquor, has found things in ice cream that ought not to be there, and has said things to pickle, canning and preserving concerns that has caused them to call in some of their traveling salesmen and go easy. And so it goes, everywhere the searchlight of investigation is showing weak spots in institutions that we never before thought of approaching, until the country at large is worked up to an acute state of doubt. We are glad to say, however, that there is one thing left untouched, that comes through this year of searching investigation free from questioning, and that is, the spirit of Santa Claus. Once upon a time, years ago there were some people who called themselves purists who tried to stir up some doubt about the good of fairy tales and Santa Claus, but it did not last long or go very far. Probably they felt that something needed investigating and purifying, and finding these the most innocent and peaceable, took it out on them. Later the investigators of the purists order have either become braver or have learned that there is not so much danger in exposing a big industry, and so they have been encouraged to tackle things that needed correcting and let Old Santa Claus and his spirit go marching along unfettered by doubt-raising questions. We are glad it is so, because it marks progress. It would not have any effect on the true spirit of Christmas, for that is one of the things that is right and will prevail through all the changing winds of development. Race suicide is about the only thing that worries Santa Claus seriously, but fortunately we've got a President that's against that and the people are with him, too, and this year the home building instinct has manifested itself in the nation so prominently that it must make our jolly old saint feel good, and make up in a large measure for the handicaps of the automobile, steam-heated apartment houses and various other modern urban ideas. As long as the home-builders thrive and the open fire burns brightly in the country, the spirit of Santa Claus will continue to reign as it should. No, nothing in the shape of a searchlight will create anything like a doubt of Santa Claus. He is here, here to stay, and his coming is good for us, and the only thing we need is to know more of him and know him better. It gives us a chance to furnish an object lesson in unselfishness at least once a year, and thus in some measure help to maintain an even working balance between the various factors in our complex makeup. We are all selfish in part, and it is an essential part of the human equipment in the struggle for progress. Sometimes, however, this factor becomes too strongly developed and it is good for us to let up on it and think of others. That's where Santa Claus helps us out. He begins with the children, but he does not stop anywhere. He is here now, henceforth and forever, the greatest factor of all in the perpetuation of peace and good will. Don't try to shut him out, for it will be yourself and not him you'll shut out. May he reign over all your homes and industries, fill your stockings full of good cheer, your hearts full of love for your fellow man, and give to all the spirit of peace and prosperity throughout the new year.

THE RIGHT WAY.

When one sees all those interested in the welfare of a business, both employers and employes, getting together for a friendly confab and planning for all to work together harmoniously, it gives the impression without further inquiry that there is something doing and that something spells prosperity of the right kind. It is about as near the ideal way to conduct business as we can arrive at in this age. An example of how it is done was furnished recently by the C. W. Raymond Company, Dayton, Ohio, who held a convention of officers and agents and made plans together for the coming year. The selling agents of the company from all directions were assembled together with the officers of the company, the agents bringing in with them many orders for clayworking equipment, thus solving their appreciation of the occasion by piling up the biggest day's sales in the history of the company. After a day spent in cosultation there was a dinner at the Dayton Club, with appropriate speeches by the officers of the company and their various agents, in which things were discussed as they are and as they might be, and out of this grow plans for the betterment of the work and an abundance of the enthusiasm that inspires men to do greater things, and do them more cheerfully. That's the right spirit, and that it pays goes without question, and, what is more important than the mere question of pay, is that it makes life more worth living for all concerned, and adds materially to that element of satisfaction and pleasure in business that makes a man not only glad to be in it, but proud of his calling.

BENEFITS OF LOCAL ORGANIZATION

In sending out the call for the next annual meeting of the brickmakers of Louisiana, to be held at New Orleans, January 16th, the Secretary of the State Association, Frank Bethune, calls attention to the fact that as a result of their organized effort, the majority of the brickmaking firms in that section are now making brick standard size, 8¼x4x2¼, when previously every plant made any size it pleased. The organization will prove beneficial in many other ways, and it is to be hoped that every manufacturer of brick in that section will attend the meeting. All are invited, whether now a member or not. It is anticipated that a committee will be appointed and sent to St. Louis for the purpose of urging the National Association to meet in New Orleans in 1908. Secretary Bethune states that the past season has been a busy and prosperous one for all manufacturers in that vicinity.

FIRE PREVENTION.

We are in receipt of Volume I, No. 1, of a pocket size magazine entitled "Fire Prevention," published by A. Irving Brewster, Richmond Hill, New York. It is a neat little magazine, but rather small in size for the bigness of the job it has undertaken, that of preventing conflagrations for the American citizens, and we predict that if it is going to do the subject justice it will have to enlarge itself materially. It is a big subject, this fire prevention question, and needs lots more attention than it has been getting; means lots of literature and lots of work of all kinds to thoroughly arouse and educate people in the matter of how to build and occupy structures without so much danger of fire, and we believe in encouraging every conscientious effort along these lines.

Written for The Clay-Worker.

THE OLD KITCHEN FIRE-PLACE.

You ever see one? Well, you missed the biggest thing in life!
I'd rather never see a plate, or spoon, or fork, or knife.—
And just eat with my fingers, all my life, than not to know
That kitchen fire-place, where all those good meals used to grow.

Why, 'twas an inspiration just to look at it! To see
The kettle hanging on the crane, and hear it sing its free
And happy tune. Sometimes, it would get mischievous, and spit
Right on the busy, grumbling, corpulent old pot, and it

Would sass the frisky kettle, and spill grease out on its back,
And mutter all the names it knew, and call the kettle black.
And when the lid was lifted from that pot,—why man, there's not
A smell in all your hemisphere of stoves, like in that pot!

Might be a country ham, or sheep's head butting dumplings out.
And when I was a boy, and smelled that, I'd jump up and shout!
'Twas worth a paying privilege to stand around and sniff
That smell. There's no such thing, these days, as that delicious whiff.

And that old frying-pan—Ugh! when I think of those fried fish,
And that fried chicken, brown and juicy, piled up in a dish—
Why, what's the use of living, and of eating, and the rest,
When you have lost the biggest thing, the warmest, and the best!

The old, three-legged ovens, with their iron lids, that stood
Back in the roomy fire-place, all filled with something good:
Hot biscuit, tea-cakes, sally-lunn, a custard or a pie.
Ah. I'll remember those nice things, until the day I die!

And then we had the coffee "like your mother used to make";
And chicken pies, and flap-jacks "like your grandma used to bake."
The children—they would come around to scrape the pan and bowl,
And they made a loving picture, that is filling all my soul.

When company came, we "put the big pot in the little one,"
And had a feast, from chicken soup right through to raisin bunn.
When Christmas was a-coming, tho', and way off yonder, too,
The preparations that were made would just a-staggered you!

The fruit cakes, full of fruit and rich old brandy, too, were made—
Big, generous ones, so all the neighbors could have some, and laid
Away to mellow,—baked in those same ovens, with the bright
Coals top and bottom. Oh, it was a dear, familiar sight!

Then, pound cakes, and the other kinds! and when the thirty-pound
Wild turkey-gobbler hung up there to roast, they'd turn him round
And round, and baste him with the dripping juice, till he
Was brown and tender, plump with stuffing,—nice as he could be.

We always left the kettle singing, too, all Christmas night,
So Santa Claus could hear it, when he went in there to light
His old clay pipe, and drink some tea. But now, no kitchen fire-place
Is waiting anywhere, to greet his changeless, merry face.

Now, how can people have a Christmas feast without this big
Old brick-mouthed fire-place! For me—I wouldn't give a fig
For all the stove-cooked, dried-up food they give you, in these days.
I want the kitchen fire-place, with all its cooking ways.

—Margaret Andrews Oldham.

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DRYING AND BURNING reduced to a reliable and economical system. See Parts IV and V of our catalog of Testing and Controlling Apparatus.
The Richardson-Lovejoy
(See page 679.) Engineering Co.

WAMTED, FOR SALE, ETC.

FOR SALE—Tile factory. Make 3 to 18 inch, also hollow building block and brick. Home demand for all that can be made.
LEWELLEN & SMITH,
11 1 cm Monroe, Ind.

FOR SALE—Eight Philadelphia hand-power brick presses, $20 each; cost $125 each; in good order. One large ornamental brick press, with four molds and twenty dies. Will sell for $100; cost $450; in good condition.
H. C. KAFER & CO.,
11 1 d Trenton, N. J.

FOR SALE—SAND-LIME WET MIXER.
12 ft. spur-geared double shaft, differential motion, wet mixer, with clutch pulley, mounted on channel frame. Two sets (96 each set) knives cast against chill. Cost, f. o. b. manufacturer, $583.75; will take $400.
MEMPHIS GRANITE BRICK CO.,
11 1 d 66 Madison St., Memphis, Tenn.

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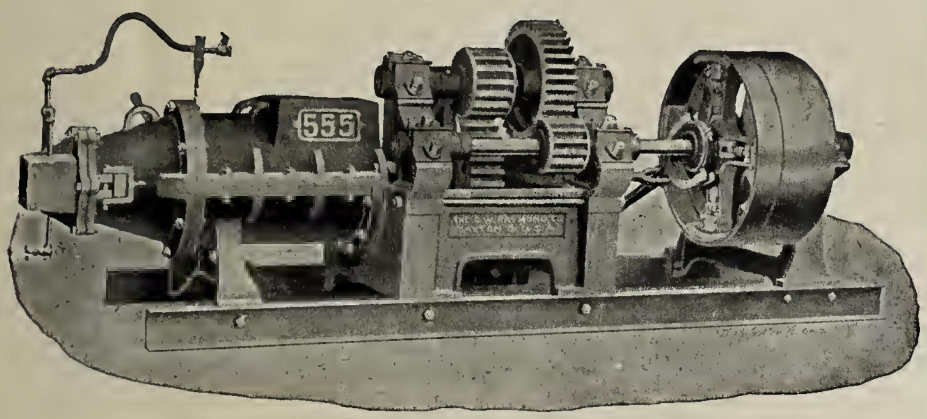
"RAYMOND'S"



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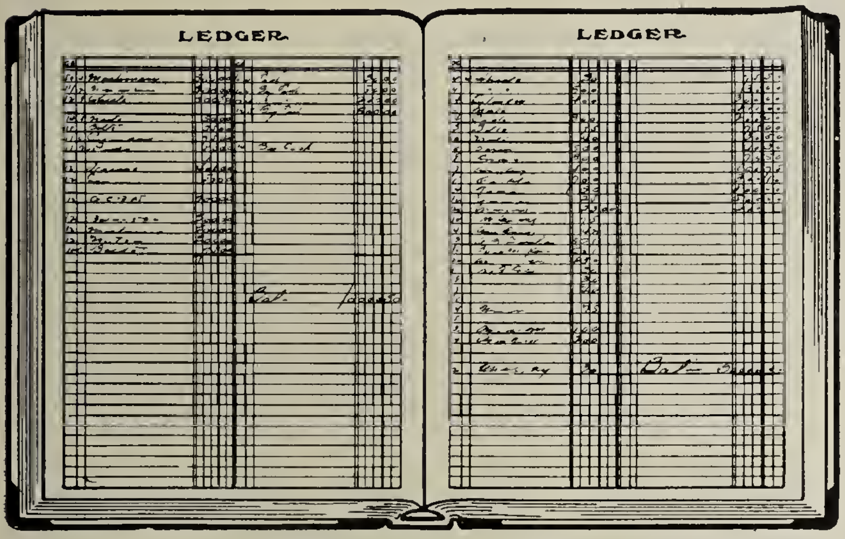

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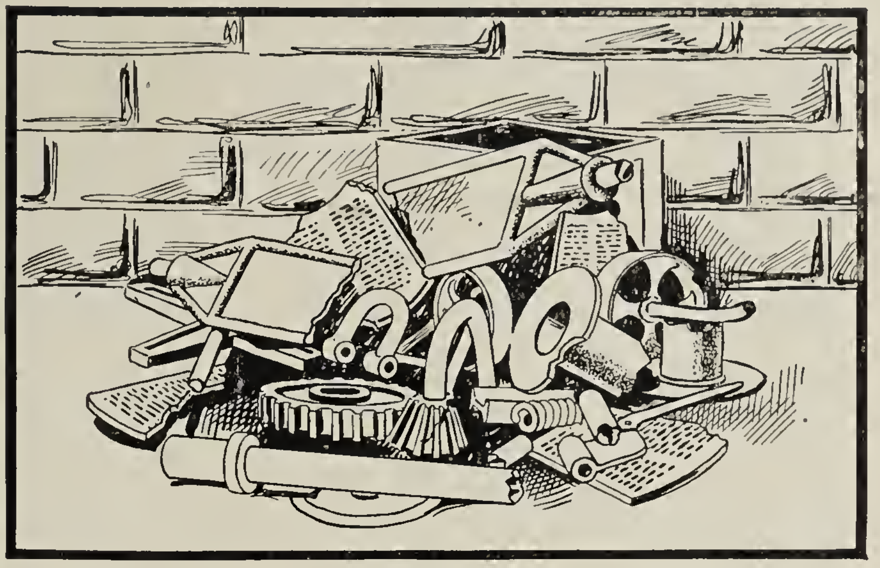

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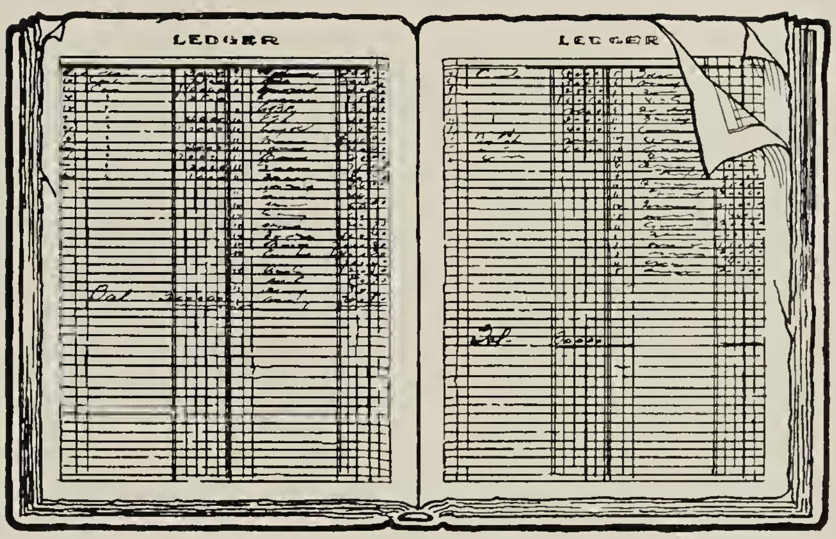

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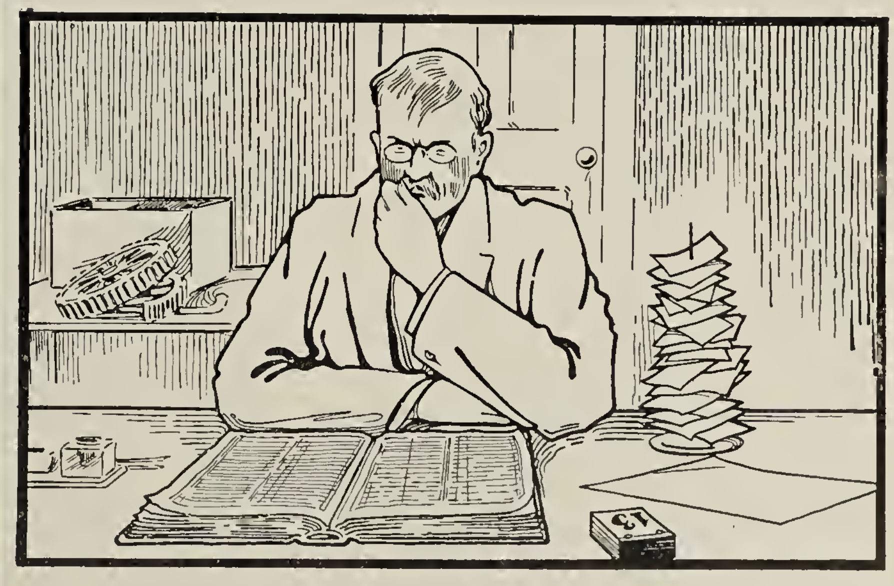


OTHERS

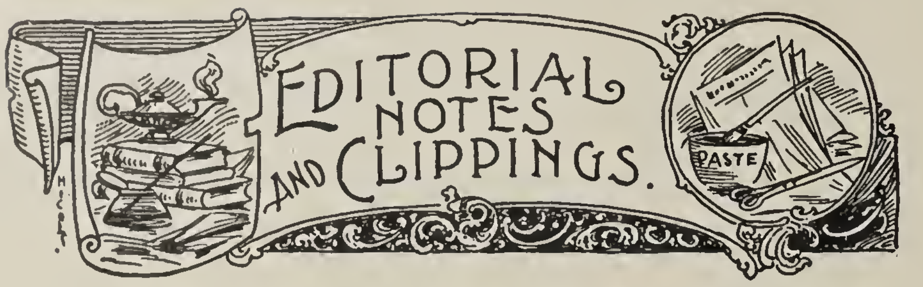
The C. W. RAYMOND CO.

DAYTON, OHIO, U. S. A.

THE C.W. RAYMOND CO. WE COVER THE GLOBE WE WORK THE EARTH DAYTON O. U.S.A.

Everything for the Brickmaker

Catalogue for the Asking



EDITORIAL NOTES AND CLIPPINGS.

The Kettel Brick Company, at Tipton, Iowa, has been sold to E. Wilson, of Triumph, Ill.

Cambridge, Neb., is to have a new brick plant. C. S. Easton, D. F. Neiswanger and A. E. Thorndyke are interested.

The Big Horn Brick Company, of Cody, Wyo., has been incorporated by F. C. Barnett, Edward Bumpus and Roy Meyers.

William J. Nell, Cartersville, Ga., is in the market for machinery for making pressed brick. Mr. Nell's address is First National Bank Building.

The Georgia Brick Company is the name of a new concern recently incorporated to manufacture brick at Adairsville, Ga., with a capital stock of $10,000.

The Calhoun Brick and Clay Company of St. Louis has been incorporated by W. G. Thomas, Charles E. McEwing, Alice T. Groesbeck, W. H. Allen and Charles P. Tiley.

The Panhandle Brick Manufacturing Company has been incorporated at Canyon City, Randall County, Texas, with a capital stock of $75,000. They will manufacture brick and tile.

The plant of the Neshannock Brick and Tile Company, at Volant, Ohio, near Youngstown, is to be greatly enlarged. The stockholders have authorized an increase from $15,000 to $50,000 in the capital stock.

Thomas Grant was badly injured by the collapsing of the wall of a brick kiln on his yard at Freeport, Ill. Mr. Grant with one of his employes was passing the kiln when the wall collapsed without any warning.

The Salmen Brick and Lumber Company of Slidell, La., recently notified all its employes that beginning December 1, the hours of labor would be reduced from eleven to ten. This will affect some 600 employes.

Herman Pohl, of Canandaigua, N. Y., for eleven years superintendent of the Hydraulic Pressed Brick Works at that place, has accepted the superintendency of the Hydraulic Pressed Brick Works at Menomonie, Wis.

A number of tests are being made of the shale at Lestershire, N. Y., by the Metropolitan Brick Company, of Canton, Ohio, with a view of establishing a plant there for the purpose of accommodating their eastern trade.

Operations were begun recently at the new brickyard at Long Beach, Cal., and a fine grade of brick is being turned out. The officers of the company are E. G. Thomas, Los Angeles, president; L. P. Musket, secretary and treasurer; C. L. Nibel, engineer.

The Columbia Brick Company of Alexandria, Va., has been granted a charter. The officers are R. O. B. Blackburn, president; C. E. Wood, vice-president; C. M. Campbell, treasurer, and L. V. Snook, secretary, all of Washington, D. C. The company is capitalized at $150,000.

The plant of the Advance Fire Clay Works, at Uhrichsville, Ohio, was badly damaged by fire December 6, which started in the boiler room. The loss is estimated at $8,000, on which there is $1,800 insurance. The plant will, in all probability, be rebuilt, as it was running full handed.

In renewing subscription to THE CLAY-WORKER, Andrew Dods, Secretary and Treasurer of the Ontario Sewer Pipe Company, says: "We enjoy THE CLAY-WORKER very much, but would like it a little better if more space was devoted to the sewer pipe interests." We think Mr. Dod and other sewer pipe manufacturers will be interested in the article on the inspection of sewer pipe on page 613 of this issue.

Thomas Dinan, a well-known Hudson river brick manufacturer, died at his home in Newburgh, N. Y., November 20, from injuries received when thrown from a wagon, his horses having been frightened by an automobile November 14. Mr. Dinan was sixty-three years old and had been engaged in the brick business nearly thirty years. A wife and seven children survive him. He was interested in a number of business enterprises.

H. J. Klemme, Clarion, Iowa, will establish a brick and tile factory at Bellmond, Iowa.

The Metropolitan Paving Brick Company has increased its capital stock from $1,000,000 to $1,200,000.

The Pittsburg office of the Arthur Koppel Company has recently been moved to the Machesney Building, 225 Fourth avenue.

The paving brick plant of the Scioto Fire Brick Company, Sciotoville, Ohio, was damaged to the extent of $800 by fire which started in the dryer.

The Darby Brick and Tile Company is a new concern which is being organized at Greenfield, Iowa. W. L. McKissik, of Adel, Iowa, is at the head of the movement.

The brickmaking plant of Collard & Son, Lexington, Ky., was almost totally destroyed by fire last month. The loss is placed at $10,000, on which there is an insurance of about $3,000.

A charter has been granted the Mountville Brick Company, Mountville, Pa. The company is incorporated for $30,000 and the directors are S. Matt, of Fridy, and C. F. Charles and A. B. Kready, of Mountville.

The brick plant at Eatontown, N. J., owned by the Crescent Brick Company, was completely destroyed by fire December 13. The plant turned out brick and fancy tile, and will probably be rebuilt. The loss is estimated at $10,000.

W. H. McCammon has purchased the plant of the Perry Brick and Tile Company, at Perry, Iowa. This plant was closed down a couple of years ago, owing to poor management. Mr. McCammon will dispose of the plant to parties who will operate it.

The Curtis Bay Brick Company, composed of Baltimore and New York capitalists, is reported to be negotiating for the purchase of the plant of the Chesapeake Brick Company, a few miles from Baltimore, Md. The Curtis Bay Company has a capital of $450,000.

Don Mathers, of Chelan, Wash., is contemplating the establishment of a brickmaking plant at Brewster, Wash., of 15,000 daily capacity. There is going to be a big demand for brick in that section next season, and Mr. Mather will have his plant ready to get a fair share of the orders.

Frank Seroy, an employe of the Kankakee (Ill.) Brick and Tile Company, was instantly killed by the explosion of a hot water heater at the plant, November 23. The boy had just entered the engine room when the explosion occurred. Another man who was in the room was badly injured.

The Robinson Clay Products Company, Akron, Ohio, is building what is claimed will be the largest sewer pipe factory in the world. At present, they are constructing a four-story building, 400 feet long and 80 feet wide, with a large wing. It is understood that another five stories and 500 feet square will be built, all to be devoted to the sewer pipe industry.

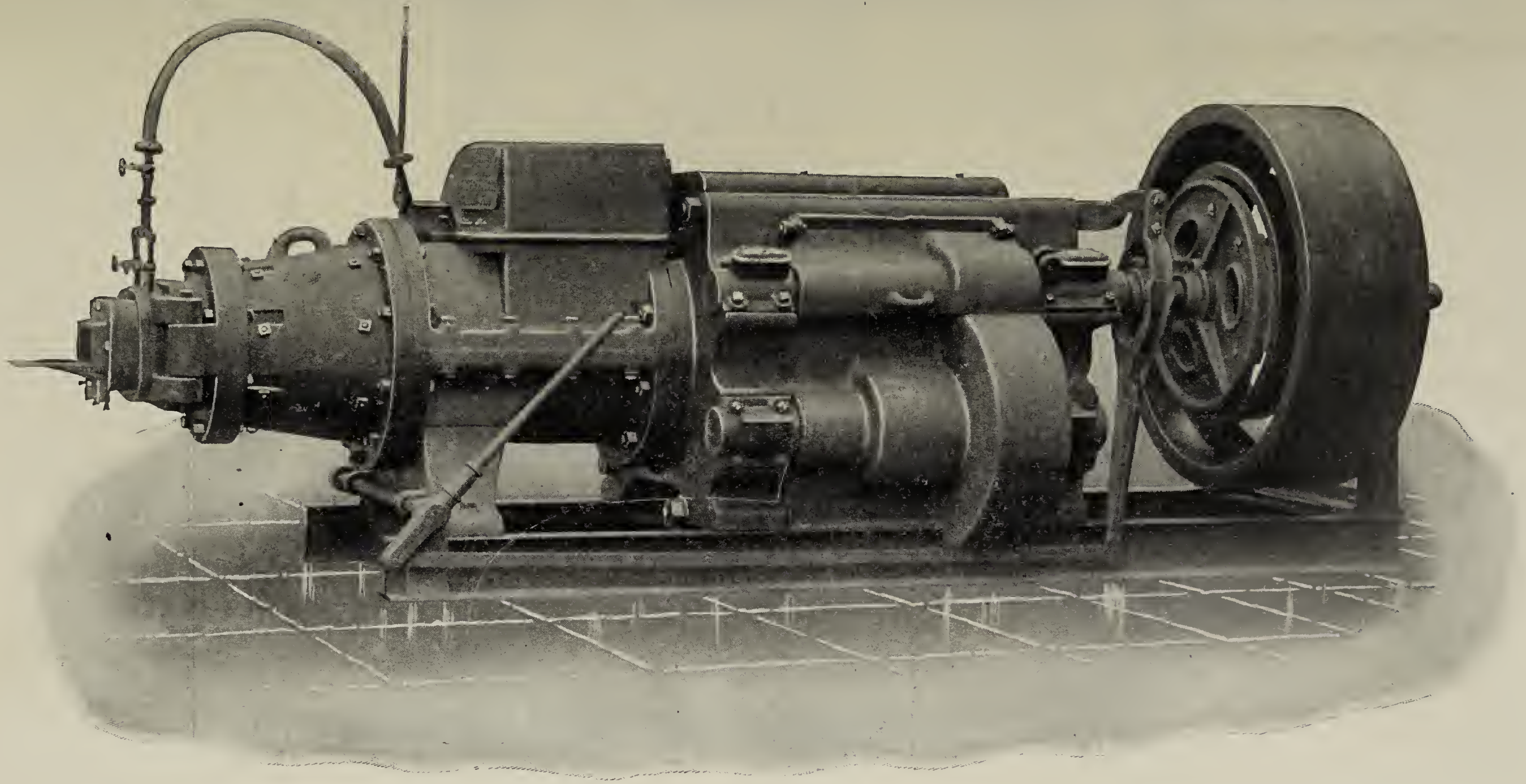
The Howard Brick Company has been incorporated with a capital stock of $50,000, at Claremore, I. T. The incorporators are O. R. and E. B. Howard, of Tusla; Dr. H. M. Howard, of Oklahoma City, and S. B. Howard, of Claremore. The company is installing a plant at Claremore which will be in operation within a few weeks with a daily capacity of 50,000 bricks.

On account of the phenomenal growth and development of the business of the "Ideal" Concrete Machinery Company of South Bend, Indiana, they have found it necessary to vacate their present factory building and have leased the plant formerly occupied by the Bissel Plow Company, which will give them three times their present floor space, and other facilities which will materially assist in promptly taking care of the ever increasing demand for "Ideal" concrete machines.

Thomas Hampton, West Elizabeth, Pa., builder of Hampton's patent down draft kilns, writes that his firm, the Pittsburg Construction Company, has had a very busy season. At present they are building a complete plant for the Mountville Brick Company, Mountville, Pa., including the setting of the boilers, building the dryer and six Hampton 30-foot down draft kilns. They are also performing the same service for the Schuylkill Pressed Brick Company, Schuylkill, Haven, Pa., and the Cambria Brick Company, Whiteford, Md. They

(Continued on page 650.)

Modern Stiff Mud Brick Machinery.



We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

(See ads on pages 704 and 705.)

EDITORIAL NOTES AND CLIPPINGS—Continued.

are also building a number of kilns for the Elsworth (Pa.) Coal Company.

The Reliance Brick Company, of Norfolk, Va., has been incorporated by D. H. Hayden, I. B. Betts and H. S. Elms.

John Harmon, an employe of the National Fire Clay Company at Strasburg, Ohio, was accidentally killed while at work on the plant.

Notice how the Robinson Clay Product Company orders machinery. Notice, also, from whom they order it. See page 688. This is a pointer for you. —adv.

W. G. Scarff, of Dallas, Texas, is at the head of a movement for the establishment of a brick plant near Dallas. A company with $100,000 capital stock will be organized.

W .H. Brecht and others, of Des Moines, Iowa, have taken an option on a tract of ground comprising 330 acres of land, adjoining the plant of the Flint Brick Company, with a view of erecting an immense brickmaking plant.

The death of Edwin A. Goodrich, a well-known brick manufacturer of Fitchburg, Mass., occurred at his home in that city, last month. Mr. Goodrich was sixty-nine years old, and had been engaged in the brick business since 1860.

William Wayman is interested in a movement to form a paving brick company to manufacture paving brick at Emporia, Kan. A good quality of shale has been found suitable for the purpose, and the town will put down several miles of brick pavements in the near future.

The plant of the Western Roofing Tile Company, at Coffeyville, Kan., was almost totally destroyed by fire December 1, causing a loss of $20,000, partly covered by insurance. The fire started in the drying room, and owing to poor water pressure, spread rapidly. Mr. Hess, the manager of the plant, gave out the statement that the plant would be rebuilt as fast as possible, as they are crowded with orders.

The American Road Machine Company, Kennett Square, Pa., write that they have had an unsually busy season, having been from six weeks to two months behind on their orders nearly one-half the year, and are just now getting caught up, but from present indications they will have all the trade they can take care of the coming winter, and the conditions of the past season are likely to be repeated next year. No small part of this business they attribute to their ad in The Clay-Worker. They are making a number of improvements in their plant.

A fine opportunity is offered any one looking for a good investment in the way of a brick manufacturing plant by Pettyjohn Brothers, of Terre Haute, who are offering for sale their pressed brick plant, which has been operated by the Terre Haute Pressed Brick Company. Pettyjohn Brothers wish to dispose of the plant for the reason that their concrete block machinery business requires all their attention. The brick plant has been overrun with orders during the building season, and is a money-making concern. Any one interested will do well to write the owners direct.

The M. E. Jacobs Brick Company of Berlin, Conn., has filed an incorporation certificate in the office of the Secretary of State. It incorporates with an authorized capital stock of $60,000. M. E. Jacobs and Leon L. LeClair, of Berlin, and Frank S. Griswold, of New Britain, are the incorporators. The property of the company comprises seventy-three acres of land. The company proposes to commence work on the property as soon as the weather will permit. It is planned to construct a modern brick plant, with a daily capacity of 50,000 brick. A steam drying system is to be incorporated in the plant, which will permit of the manufacture of brick the year through.

Dubois is to have what is claimed to be the largest handmade fire brick plant in Pennsylvania, to be known as the Bickford Fire Brick Company. J. A. and S. M. Bickford, of Lock Haven, are officers of the new company and were instrumental in the organization of the company. The plant will be 600x100 feet in dimensions, with 32 kilns and 6 pans. It will have a capacity of 110,000 brick per day, or 33,000,000 per year. It is proposed to start operations on the plant the first of the coming year, and the company expects to be making brick early next fall. The clay will be brought to DuBois over a narrow-guage road from the valuable clay lands, located ten miles distant from that town. The company has a capital stock of $500,000. The officers are J. Calvin Meyer, president, of Bellefonte; J. A. Bickford, treasurer and general manager, and S. M. Bickford, secretary and general sales agent.

The York Shale Brick Company is making a number of improvements at their plant at York, Pa., installing one of Dennis's double up and down draft kilns.

A brick manufacturing company has been organized at Dardanelles, Ga., by Judge L. C. Hall, R. C. Bullock, T. A. Johnston, W. L. Scarlett, B. Bentley and C. Cunningham. A plant of 20,000 daily capacity will at once be erected.

A fine deposit of clay has been discovered on the ranch of Mrs. R. N. Wallace, at Pleasanton, Texas, and the tests have proven so favorable that it is more than probable that a plant will be built for the manufacture of brick.

The Juniata Brick and Tile Company, Mifflin, Pa., write that, although a new company, they are selling all the brick they can make. Their business has increased to such an extent that they will install a dryer during the winter months.

E. L. Baynes, 700 Gervais street, Columbia, S. C., writes that he is to be general manager of a company which is being organized to manufacture brick, and he is accordingly in the market for complete equipment for a small capacity plant, which he hopes to have ready for operation by April 1.

The office of the Brockway Brick Company, Fishkill Landing, N. Y., was entered by burglars early in the morning of November 28, who wrecked the safe and furniture and got away with between $500 and $600 cash. Two strange men were noticed loafing about the place the evening before, and it is supposed they did the work.

The Buffalo Forge Company has recently received an order through its London office for their large steel plate fans, with self aligning bearings and built of extra heavy material, for use in a heating and ventilating system for the shops of one of the Belgian state railways. The order also included four heavy down draft forges, which will weigh in the aggregate 3,000 pounds.

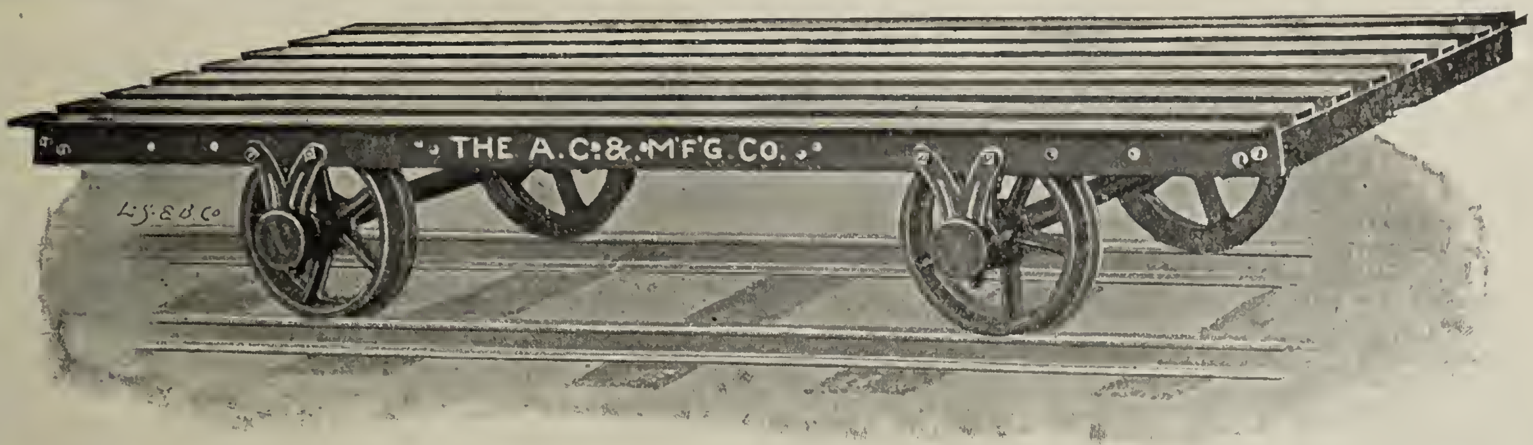
Cook & Backentoss, owners of the Dillsburg Vitrified Brick and Tile Company, at Dillsburg, Pa., write that they have signed a contract with Mr. Thomas Hampton for the building of their new plant. They say they have an inexhaustible supply of fine clays and will be able to manufacture almost any shade of high class brick. The plant will have a capacity of 30,000 gray and buff brick daily.

E. M. Freese & Co., manufacturers of brick, tile and terra cotta machinery, Galion, Ohio, have favored us with a very pretty calendar, presenting a landscape entitled "Through Autumn Woods," the coloring of which is charming and takes one back to boyhood days, when we were wont to go nutting. Those of our readers desiring a handsome wall ornament, carrying with it a reminder of Messrs. Freese & Co., may obtain same on request.

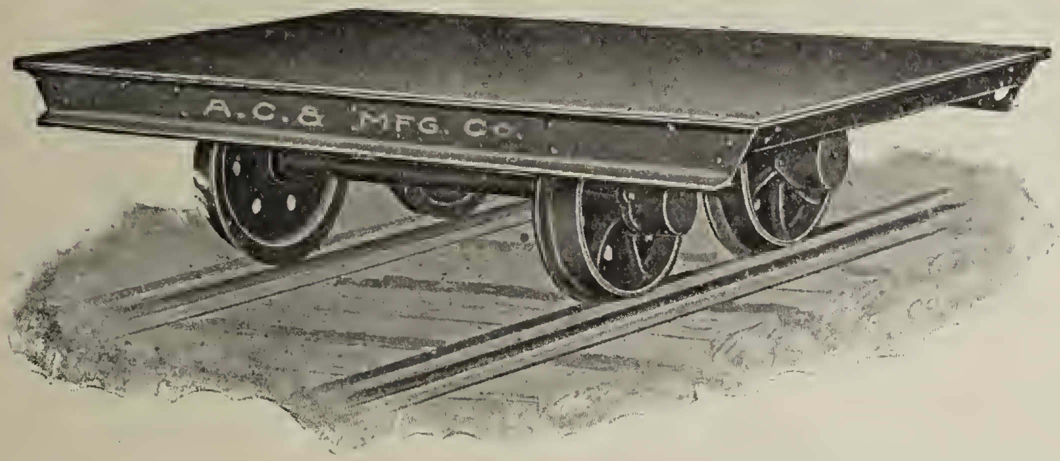
The first of the suits resulting from the dreadful landslide at Haverstraw, N. Y., last January, has just been filed. This one is brought by Mrs. Minnie Adlin, whose husband, a young Jewish rabbi, lost his life on that occasion, against the Excelsior Brick Company, of Haverstraw, John W. Gillies, James W. Gillies, Samuel Gardner, John Nicholson, John Reilly, J. Esler Eckerson, John Nicholson, Jr., Everett Fowler and Lucien Washburn. Mrs. Adlin, who has had a child since the disaster, is suing for $25,000.

We are indebted to Messrs. C. A. Potts & Co., of Indianapolis, the well-known manufacturers of brick machinery, for an exceptionally handsome calendar. It is a reproduction of the famous picture, "Miss Mischief." A pretty miss in her 'teens and a bright red riding coat, stands in the hall ready to greet the man who comes to take her out. It is a pretty picture, indeed, and makes the fellow who looks upon it wish that he was the expected one. We presume that Messrs. Potts will generously distribute this calendar among their friends and patrons so long as the supply holds out.

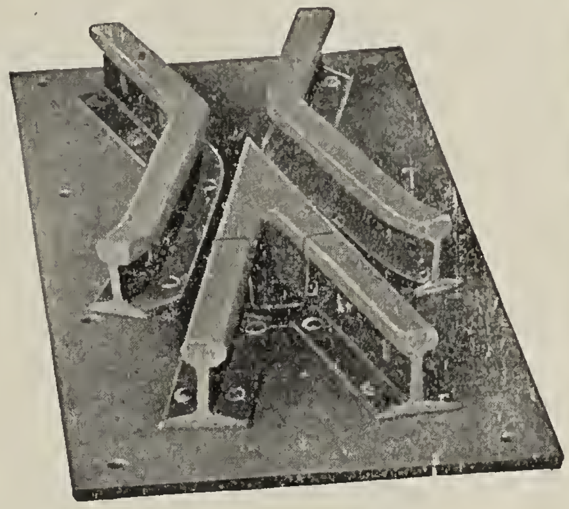
Writing under date of December 6, J. C. Steele & Sons, Statesville, N. C., manufacturers of "New South" brick machinery, say: "We are glad to report that we are having the heaviest fall business in our history. We have recently shipped complete outfits of brick machinery of 25,000 daily capacity to Whitney, Fla.; Tallahasse, Fla., and Friars Point, Miss.; also an outfit of 40,000 capacity to Summitt, Miss., and Mobile, Ala. We have shipped a complete No. 5 outfit to Norfolk, Va., and have just booked an order for a complete No. 5 outfit for Winston-Salem, N. C. An automatic and cutting table has been shipped to the Scott Brick Company of Atlanta, Ga., and an automatic side cutting table to Richmond, Va."


THE A.C.&.M'F'G.CO.
L.S.E.&Co.

No. 108. Stiff Mud Flat Car. Steel Deck.



No. 114. Sand Lime Brick Car. Channel Frame.



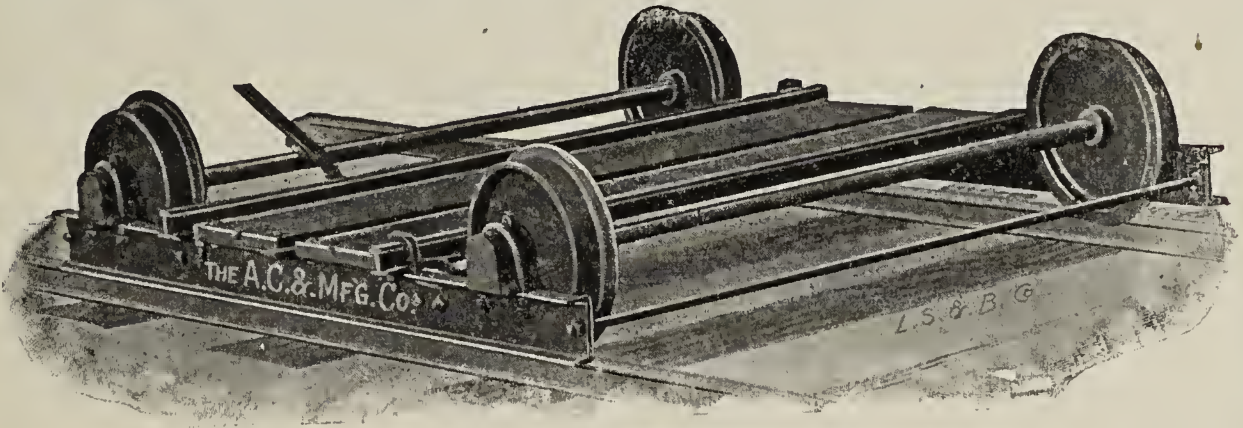
No. 1025. Steel Frog.

The Atlas Car & Mfg. Co.,

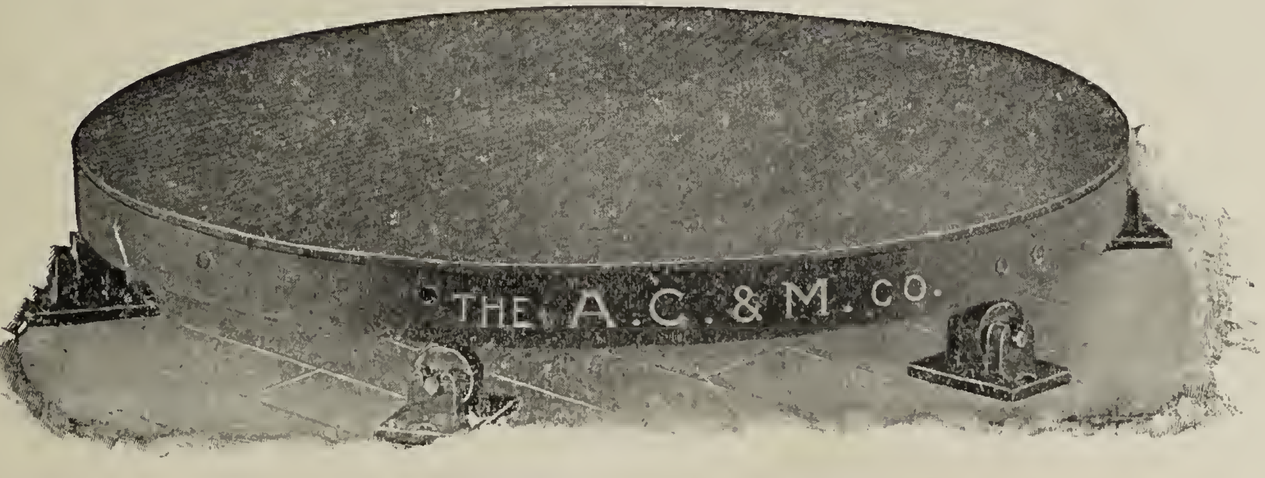
CLEVELAND, OHIO.

Manufacturers of Steel Dryer Cars of all Descriptions and Equipments for Hot Air Dryers, including Rail, Frogs, Switches, Steel Ties, Portable Track, Etc Also Transfer Cars, Turntables, Clay and Dump Cars.

No. A. Flanged Pallet.


THE A.C.&.MFG.Co.
L.S.&B.G.

No. 142. Transfer Car.



No. 147. Checkered Steel Top Turntable.

Written for The Clay-Worker.

WESTERN PENNSYLVANIA BRICK NOTES.

SELDOM IN THE HISTORY of brickmaking has business at this particular time of the year been so good as it is at the present time. This applies not only to the building brick line, but equally well to the fire, furnace and paving brick ends of the business. There is at the present time an immense amount of building under way, much of which was awarded some months ago, and these projects have just commenced to reach the stage where the bricks are required. Since the first of the month, the writer has called personally on several score of the manufacturers and dealers both in Pittsburg and in the surrounding towns, and in nearly every instance received the welcome information that the plants were running almost, and in many cases, entirely, to their capacity, and that these firms were enjoying the best business that they had had for many years at this time of the year. As a rule, these firms stated that they were not in receipt of any particularly large contracts, but that their books contained a vast number of medium sized orders, and that these had been coming in with a regularity that insured considerable more profit than a few larger ones would, which would amount to the same number of brick, owing to the higher prices that they had been able to command for the smaller quantities

The sewer pipe plants are running to the utmost capacity, and all that has saved the local situation is the fortunate fact that the larger producers had good yard and shed stocks on hand. These stocks have been pretty well cleaned out, however, owing to the fact that rush orders have been placed by many small cities and towns throughout the entire Pittsburg district for sewer pipe in order that sewage contracts can be filled before the coming of bad weather.

The same thing may be said about fireproofing, as many buildings now under way are in such shape that, with good luck, they can be enclosed by the time winter comes, and thus be completed during the cold weather.

The fire brick manufacturers are enjoying an excellent season, which is a little unusual at the present time, as this is generally conceded to be a comparatively slow time of the year. There are a large number of blast and openhearth furnaces under course of construction here at the present time, however, and as work will be pushed on these all through the coming winter, there will be a steady demand for fire brick for these operations for some months to come. The local manufacturers of this material advise that they have enough business booked to insure the steady operation of the plants through the entire winter.

The report of Building Inspector S. A. Dies, of Pittsburg, shows that there was a slight falling off in the number of permits issued as compared with October of this year, but on the other hand, a comparison of last month with the reports for November for the last seven years shows that November, 1906, was considerably above the general average. It has been anticipated that building construction this year would be stopped earlier than usual, but this has not been the case, and from the present appearances, there may be at least a month more of good building weather. Two hundred and seventy-eight permits were issued last month, for operations that are scheduled to cost $1,062,772, and these were divided as follows: 195 new buildings, to cost $1,013,030; 25 additions to cost $19,282, and 58 alterations to cost $30,460.

In Allegheny, the building record shows a considerable gain over the previous month, and also over the same month of last year. A total of 63 building permits were issued during the month for operations that will cost $221,491.

James Davison has resigned as superintendent of construction of the National Fire Proofing Company, of Pittsburg, and has accepted a position as general manager of the Duquesne Fire Proofing Company, also of this city. Upon his leaving the National, which concern he has been connected with for over fifteen years, the employes of the construction department presented him with a gold chain and diamond charm.

Edward P. Remington, of Pittsburg, has had plans prepared for the erection of a fine business block at Fifth avenue and Bouquet street, this city. The two exposed sides of the building will be of white terra cotta, and the building will be one of the finest in the Oakland district, costing in the neighborhood of $85,000. It will be eighty-five by one hundred and forty-two feet in size, and will be three stories in height. Work will be started this winter.

The Seward Brick Company, of Johnstown, Pa., which has a plant at Seward, Pa., was awarded the contract to furnish 200,000 brick to be used in the erection of the new school buildings at Johnstown. The price was $10 per thousand, and the company is now unable to furnish the brick on account of the repairs going on at the plant. The contract will be awarded to another concern. The brick plant closed down several weeks ago, and it is said by the members of the firm that the fires will not be lighted before next spring.

The capacity of the Harbison-Walker Refractories Company's big plant at Templeton, Pa., is to be doubled during the winter. The plant now has a daily capacity of about 42,000 brick, or about 15,000,000 a year, and this is to be increased as rapidly as the additions and improvements can be made, to 30,000,000 per year. There is a heavy demand for the product of the Templeton plant, and there is a possibility that next spring further improvements will be made which will increase the annual capacity to 50,000,000. The plant is one of the most modern that the concern has.

William R. Hilton, superintendent of the Dewey Brick Company's plant at Brady's Bend, Pa., has resigned his position to assume the general superintendency of the new plant of the Kittanning Clay Products Company, which is now under course of construction at the mouth of the Cowanshannock, near this place. The new plant will be modern in every detail, and is built within easy access of excellent deposits of the finest clay.

The stockholders of the Pennsylvania Fire Brick Company held the annual meeting the middle of last month at Lock Haven, Pa., at the offices of the company. The meeting was largely attended, and the report which was submitted was most satisfactory in every detail. The statement for the year shows that the company has been very prosperous, and that the plants have been doing a record business. The Beech Creek plant of the company is one of the finest and best equipped in Pennsylvania, and has been working to capacity during the greater part of the year.

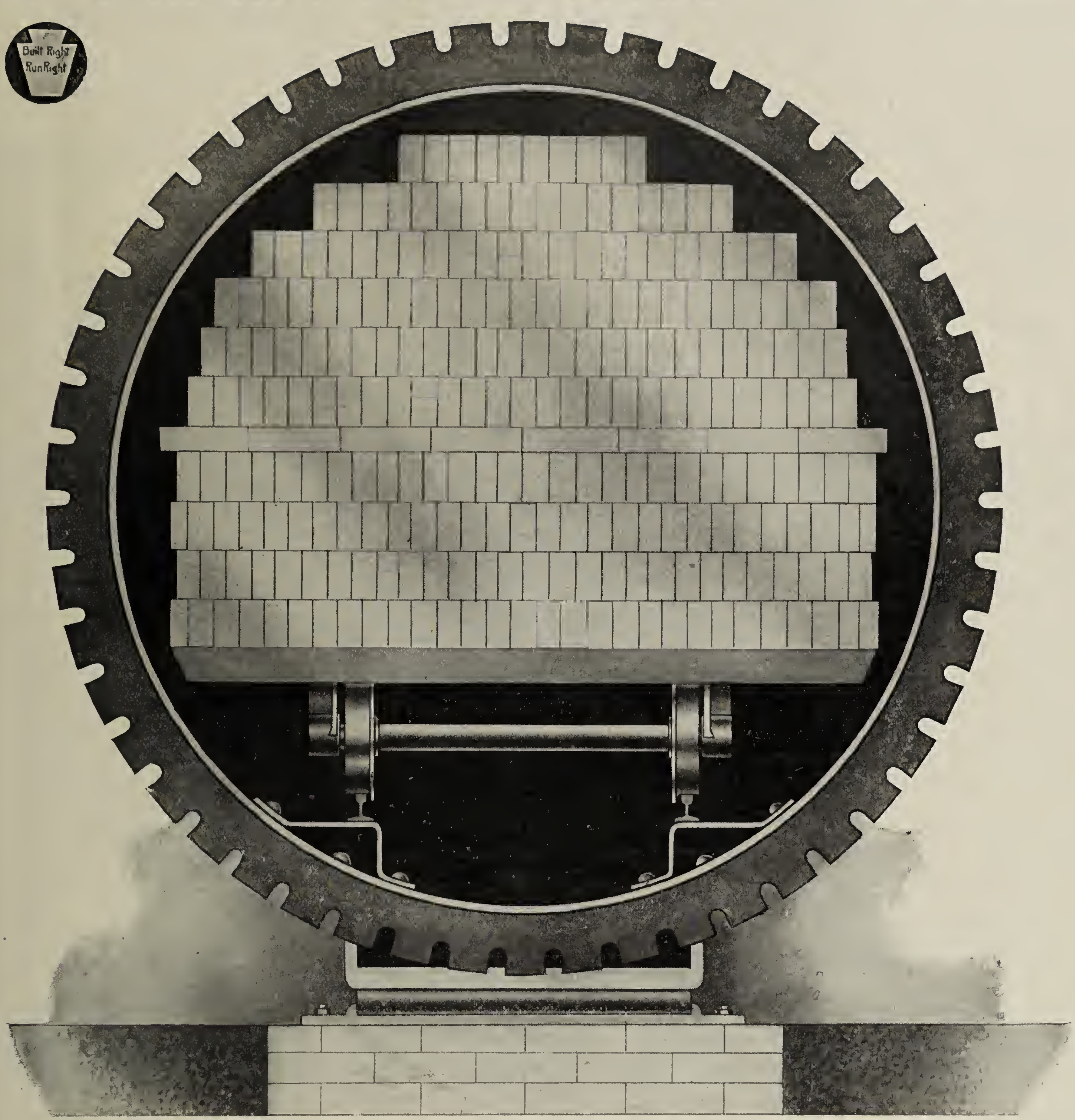
At the annual meeting of the Hayes Run Fire Brick Company, of Lock Haven, Pa., E. L. Orvis was elected president; W. O. Bentley, secretary and W. I. Harvey, treasurer and general manager. E. L. Orvis, Bellefonte; T. M. Stevenson, W. O. Bentley and W. I. Harvey, Lock Haven, and J. K. Furst, of New Castle, Pa., were elected to the board of directors. The plant of the company, located at Orvis, is in a flourishing condition, and the stockholders are well satisfied with the excellent showing of the past year. The improvements and additions that have been under way for some time have been completed, and the plant is still running to the extreme capacity. The company is building ten additional dwellings for the men employed at the plant, and as soon as spring weather will permit, more will be built.

The Eureka Fire Brick Company, Mt. Braddock, Pa., has purchased several tracts of fine fire clay in the immediate vicinity of the plant, from E. L. Messler, of Pittsburg. The price paid was in the neighborhood of $100,000, and the new properties will be developed at once.

The new fire brick plant of W. H. Wynn & Co., at Blue Ball, Clearfield county, Pa., is almost completed, and will be placed in operation some time during the latter part of this month.

The old Rumbaugh brick works at Stewart Station, Pa., are being placed in first class running condition by a new concern that has applied for a charter under the name of the Van Ormer Brick Company, of Trafford City. The applicants are J. H. Cunningham, Thomas S. Patch, Dr. George L. Beswick and Robert Wilson, of Wilmerding, and L. G. Van Ormer, of Trafford City. The old Rumbaugh plant has been idle for

Built Right Run Right



SAND-LIME BRICK MACHINERY.

Our Sand-Lime Brick Machinery is at least a little better than any other. We have testimonials to show it. We build it all in our own factory and are sure of its quality. We are the only firm doing this. We will design and equip your entire plant, or will sell you parts of your equipment. Our catalog, describing and illustrating our full line, will be sent upon request.

We also build a full line of machinery and appliances for making Clay Products, Cement and Pottery, Dryer and Dryer Apparatus.

Everything we sell we make. We therefore know its quality to be right.

The American Clay Machinery Co.,

Willoughby, Ohio, U. S. A.

See ads on pages
671 to 674

about a year, and has been leased by the new concern. It has a daily capacity of about 75,000 brick, and the lease includes about eight acres of shale rock and clay. Red building, face and rough brick will be manufactured, and at the start the plant will employ about fifty men.

Written for The Clay-Worker.

POTTERY NEWS.

THE YEAR 1906 has been a great one for the pottery industry and few years in the history of the industry have been better, so far as orders are concerned. Of course, there is the usual complaining about poor prices, which have caused so many firms to throw up their hands in the past; but, taking all together, there has not been a year for several years that has been as satisfactory as the one just gone through with. Orders have been plentiful for those who have taken the trouble to go after them, and prices are, as a general thing, a little better than they have been for the past two or three years, and labor troubles have not bothered us as much this year as they usually do. So far as East Liverpool is concerned, gas has been the worst trouble that the potters have had to contend with and, of course, this has only been during the past few months, and according to the gas companies, relief is in sight, although this is not assured. Several of the potteries have taken to using coal. However, this is used at a great disadvantage here, owing to the fact that the great majority of the plants are located in the heart of the city and coal is hard to use, not only on account of the dirt, but the majority of the potteries do not have the room to store. However, necessity is the mother of invention; if the worst comes, it is probable that coal will be used generally and the plants will get coal space some place.

Extensive improvements are to be made at the potteries at Sebring, Ohio, between now and January 1. The Sebring Pottery Company is erecting a new kiln which is almost completed. The French China Company is doubling the capacity of their sliphouse, while the Oliver China Company is putting in a complete new outfit of Patterson glaze grinding cylinders. The Limoges China Company is also contemplating improve-

The Warwick China Company will make additions and improvements to its sagger shop during the holiday shutdown. The factory is located at Wheeling, W. Va.

The Bradshaw China Company, of Niles, Ohio, is tearing down some of the old kilns and will replace them at once with new ones. They are also erecting two additional kilns.

The Roseville Pottery Company, of Zanesville, may increase the capacity of one of their factories the first of the year.

The plant of the Veedersburg Pottery Company, at Veedersburg, Ind., has been bought outright by the Wabash Clay Company, who formerly owned a majority of its stock. It will still be operated as the Veedersburg Pottery.

The Roodhouse Novelty Pottery, at Roodhouse, Ill., is almost completed and the owners of the new factory expect to be able to start it up in full during January.

A small pottery has been started up by the Business Association of Augusta, Ga., which is now running in full, making dinner and toilet ware. The plant has only one small kiln, but they have demonstrated that they can make ware with their clays and with their labor there, and it is probable that a larger plant, with more and larger kilns, will be erected by the citizens of that town shortly.

Mr. Chas. P. Britton, treasurer of the Star Porcelain Company, of Trenton, who has recently recovered from a serious illness from which he was not expected to recover, is again taking active part at the factory after an absence of six months.

The Hartford Faience Company, of Hartford, Conn., after completing a large addition this summer, has decided upon several interior improvements, both in their factory and its equipment, which are now being made. The new installations and improvements will be ready for work within the next two weeks.

The Wirt Manufacturing Company, which is putting up an electric porcelain pottery at Bryantville, Mass., have the buildings completed and have two of their three kilns ready for use. The mechanical equipment is almost completed and will be ready for use within two weeks. President H. C. Wirt announces that he expects to be making ware within the next thirty to sixty days.

Tom Potter.

WANTED, FOR SALE, ETC.

WANTED.

One second-hand six-mold dry press; must be in good condition and cheap. Address
BRICK A.,
12 1 cm care Clay-Worker.

WANTED—10,000 six-brick wood pallets, 3 spring off-bearing trucks and 3 mule trucks. Quote spot cash prices or no answer.
T. H. McMICHAEL.
12 3 d Lewistown, Pa.

FOR SALE—Dry presses, 3-mold U. S. dry press, 3-mold Boyd dry press, 4-mold U. S. dry press; 500-horsepower Allis Corliss engine. Address
B-K BRICK CO.,
12 1 c Denver, Col.

WANTED—Copies of Davis's Bricks, Tiles and Terra Cotta. Good price will be paid if same is in a good presentable condition, and free from mutilation. Address
APPRENTICE,
10 1 L Care Clay-Worker.

FOR SALE—Two second-hand "Simpson" Four-mold brick machines, now in operation, with capacity of eighteen to twenty thousand brick per day. Also one second-hand "Williams" Pulverizer. capacity about forty-five thousand brick per day. Present owners replacing with machinery for special work. For particulars address McNEIL PRESSED BRICK CO.,
12 1 d No. 506 Victoria Bldg., St. Louis, Mo.

FOR SALE—Up to date soft mud plant. Capacity twenty-five thousand. Twenty acres land. fourteen feet pure loess clay, fine moulding sand on property. Cheap fuel and labor, good shipping facilities. local market for nearly whole output. New brick residence and office on property. This proposition will bear close investigation. Good reason for selling. Address
WM. M. READ,
12 1 cm Princeton, Ind.

WANTED.

Fifty second-hand dryer cars, single deck and iron, gauge 25 inches. Address
ATCHISON PAVING BRICK CO.,
12 1 d Atchison, Kan.

FOR SALE—A well equipped brickyard, located in Mississippi. Capacity 40,000 per day; well located; good clay, and up-to-date machinery. Will sell at a bargain. Address
J. S. LOVE,
12 1 dm Lumberton, Miss.

WANTED—POSITION

As superintendent, by a man thoroughly acquainted with all the details in the manufacture of brick. Can give the best of references. Address
F. W. C.,
12 1 c care Clay-Worker.

FOR SALE—One Brewer 9A brick and tile machine, in first-class condition. Has been used only to make 250,000 brick. Will sell at a bargain. Address
A. F. LYTCH,
12 1 cm Laurinburg, N. C.

WANTED.

An experienced man to represent a clay machinery firm on the road. Must know how to erect and operate machinery, as well as sell and obtain settlement for same. A good permanent place for the right man. Address
PROGRESS
12 tf L care Clay-Worker.

FOR SALE.

Either whole or half interest and management of best stoneware plant in Texas. In constant operation (summer and winter) since 1882. Clay, abundant and perfect, labor reasonable, facilities ample, prices good, demand greater than output, climate best in United States. Mining interests exact owner's attention. Cash proposition only considered. Address
"TEXAS,"
12 1 dm care Clay-Worker.

WANTED—A man capable of conducting a modern brick plant in all of its details. An opportunity will be given to acquir an interest to the right kind of a man. Address
WELLSTON,
12 1 d Care Clay-Worker.

WANTED—Position by a young man, experienced, and a practical brickmaker, as superintendent or manager of stiff mud plant. Face brick preferred. Can give good references. Address R. E. A.,
12 1 lm care Clay-Worker.

WANTED—A first-cass shale brick burner for common building and paving brick in round down draft kilns. Applicant must be sober, industrious and well recommended. State salary wanted. Address
12 tf d L. S. S., care Clay-Worker.

NO SCUM. NO WHITEWASH.

No More Trouble from Scum or Whitewash. Scum or whitewash eliminated in burning without the use of chemicals. No change in kiln or furnaces. Compensation when results are obtained. Full particulars on request. Address
JOHN McALLISTER,
12 5 d 15 Third Ave., Columbus, Ohio.

FOR SALE

Brickyard, located on railroad and water, twenty miles from Norfolk, Va., having daily capacity of thirty thousand clay bricks and five thousand cement bricks. Steele brick machine, Standard cement brick machine, Standard drier, up and down draft kilns, all in good condition. Sufficient clay and sand for ten or more years. Earned over 20 per cent. this year on sum at which will sell. Satisfactory reason for wishing to sell.
12 1 cm Address S., Care Clay-Worker.

(Continued on page 658.)

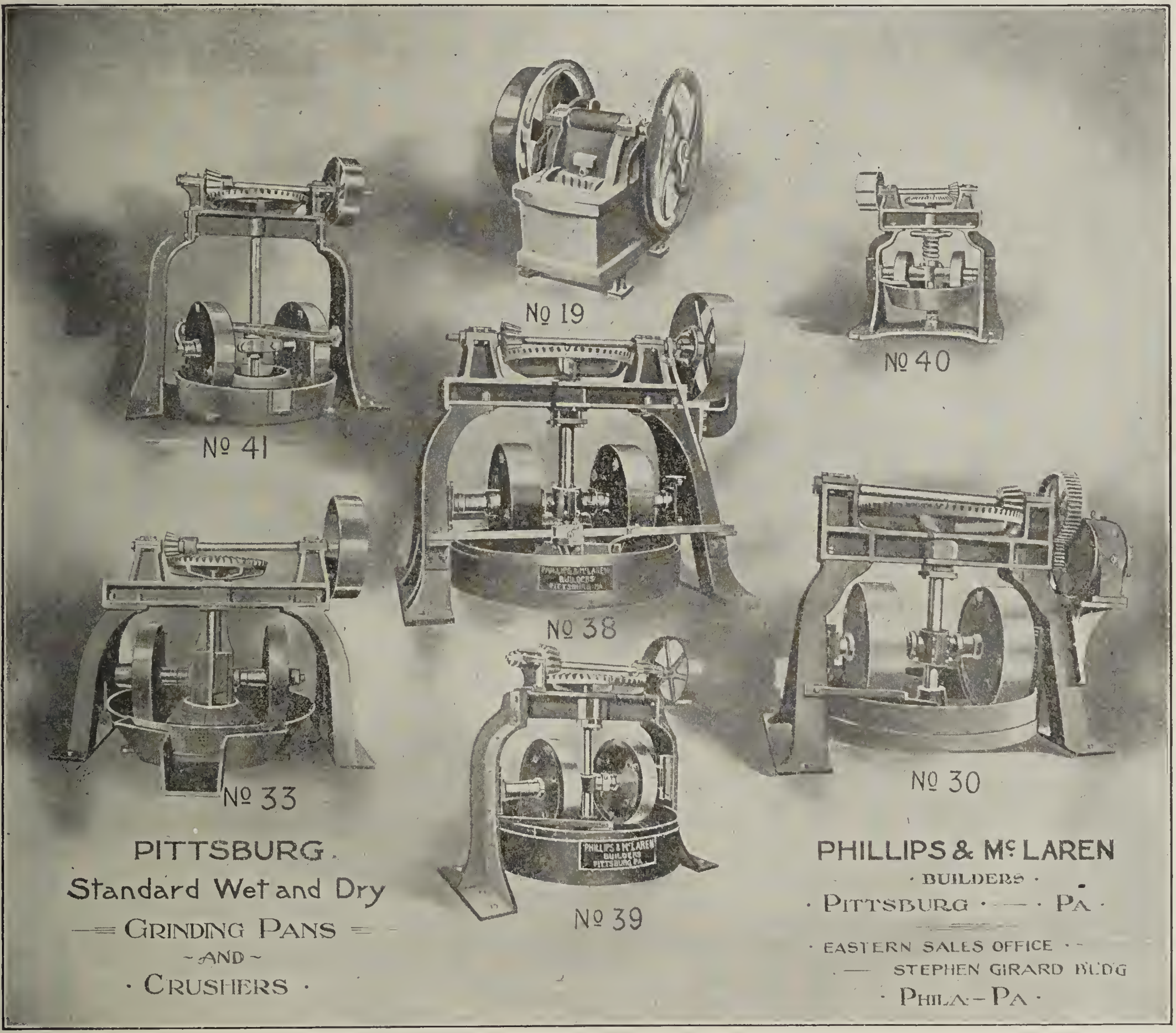
PHILLIPS & McLAREN,

Pittsburg, Pa.

Standard Wet and Dry Grinding Pans

FOR BRICKYARDS, STEEL WORKS, POTTERIES, CHEMICAL WORKS, SAND PLANTS, GLASS WORKS, STEEL FOUNDRIES, ETC.

This illustration is designed to show a few of our Pans, built Wet and Dry, Revolving and Stationary, from 3½ ft. up to 10 ft. diameter. Also made for unusual conditions, such as grinding in water, grinding carborundum, foundry ashes, refuse, etc. They are built for hard service, are extremely simple in design, heavy and powerful.



If interested tell us what your material is and capacity desired, and we will quote you accordingly.

We make **Crushers** also.

Written for The Clay-Worker.

PACIFIC COAST NEWS.

THE SAN FRANCISCO building situation is still a rising tide and the advent of winter weather has not served to check the rate of increase except in the case of frame construction, where the record for November is practically the same as for October. During the month of November a total of 624 permits were issued for buildings authorizing construction to the value of $7,399,000, exclusive of permits for all buildings of less value than $1,000 each. Of the total of the month, 173 permits authorizing improvements amounting to $3,917,000 were for brick buildings and for the reconstruction of brick and stone buildings. During the month preceding the permits for brick buildings and for reconstruction work numbered 118 for an aggregate value of $2,712,000. This shows a gain for November of 53 permits and $1,205,000 in aggregate value. About one-half of the increase in value is due to several permits for costly reconstruction work in which the greater share of the cost is for brick work, but aside from this there is an increase in new brick construction work of more than half a million dollars. The average cost of the brick construction work undertaken during the past few weeks continues to show a fairly high figure, being about $23,000 for each brick building. As heretofore, the cheaper class of brick buildings continue to use second-hand brick almost exclusively where ordinary brick are required, but all the more expensive structures are using new brick. Brick men report that the demand for soft mud brick is still rather slow, though an increase is evident from week to week as the better class of buildings get beyond the foundation stage. The demand for facing brick and for terra cotta is large and increasing, and there is still talk of a possible scarcity of structural terra cotta.

Construction circles here and in Los Angeles are deeply interested in the causes for the collapse of the Hotel Bixley at Long Beach, California, on November 9. This building was a modern reinforced concrete structure to cost, when completed, about $750,000. The building had reached the fifth floor when the disaster occurred. The first sign of trouble came when one of the columns in the fifth story fell, striking the fifth floor which in turn gave way, and the entire five floors of the central portion of the building gave way, each floor giving way in succession as the upper portions fell. The loss is variously estimated at from $150,000 downward. Nine workmen were killed and many were more or less seriously injured. A committee of Los Angeles architects examined the ruins immediately after the collapse, but so far no report has been given out. The architect of the building says that the disaster was due to the haste of the contractor and to "green" concrete, but this is denied by the latter. Other architects point to the fact that the floors of the central portion which went down were of hollow concrete, while the wings which stood were of solid tiles as suggesting a cause. Architects and engineers here claim not to be in possession of sufficient facts to justify them in assigning a cause. Just what influence this accident will have on building here is hard to tell, but unless the matter can be satisfactorily explained, it is undoubted that it will tend to check the use of reinforced concrete in the building of tall structures.

The Garvanza Brick Company, incorporated and capitalized at $200,000 by C. E. Benedict, W. J. Danford, Charles Cherry, and others, has started out to manufacture brick on independent lines. Machinery has arrived and kilns are being constructed at Garvanza, California. The promoters of the new concern have secured ten year leases on several good clay banks and say that within a week or two they will be making good building brick on a large scale. They propose to undersell the "combine" at Los Angeles.

Brick and terra cotta men of San Francisco report that there is a strong demand for terra cotta and pressed brick at Los Angeles, Cal. Last week the Carnegie Brick and Pottery Company, of this city, secured a contract amounting to $18,250 for ornamental terra cotta for the International Savings and Exchange Bank, a ten-story and basement office building now under way at Los Angeles.

A. T. Ashbridge, of Los Angeles, has the contract for brick work for a new store building at Hollywood, a suburb of Los Angeles. The architects of that city report that plans now being drawn call for a large amount of pressed brick.

Sealed bids will be received by the Board of Supervisors of San Francisco until December 17 for the purchase of sewer bonds amounting to $1,087,200. The proceeds will be used in sewer work. The proposed interest of the Hamburger Realty and Trust Company, of Los Angeles, in the brick making business is creating considerable interest. This company is preparing to erect an immense six-story building with a frontage of 322 feet on 8th street, 295 feet on Brown street and 184 feet on Hill street, at a cost of $1,500,000. The exterior is to be in light cream glazed terra cotta, and it is estimated that between three million and four million brick will be required. The management of the company claims that the lowest price it has yet been able to secure from brickmakers for the large amount of brick required is $7.50 per thousand, and asserts that they have secured the services of two experienced brick men and with the aid of these the company will make its own brick at a cost of between $3.50 and $4.00 per thousand. Los Angeles brick men do not seem to take the matter very seriously and are inclined to feel that it is in the nature of a bluff.

The directors of the Remillard Brick Company have called a special meeting of stockholders to be held at the company's office in Oakland on December 10 to take action on the ratification of the several contracts made by the directors.

The Blaine Brick and Tile Company has been reorganized at Blaine, Wash., with a capital stock of $250,000, by D. C. Senter, O. C. Mathis and Jack Shaw. The company has secured the contract on land near Blaine and will install the brick machinery and will establish a plant with a capacity of 100,000 pressed brick per day. Tiling and cement blocks will also be manufactured.

Henry Scholfield, representing New York and Saltillo parties, is at Saltillo, Mexico, arranging to establish a brick factory.

The Simons Brick Company, of Los Angeles, has secured a contract for furnishing brick for the Los Angeles Post Office and is arranging to turn out the required brick at its plant at Bandini, five miles out of Los Angeles.

The preliminary work for Carquinez Brick and Tile Company's plant at Eckley, Cal., is completed and work will begin at once on the erection of the necessary buildings and the installation of the machinery.

M. C. Montgomery has discovered a large deposit of clay near Livermore, Cal., on his ranch where the Western Pacific railroad graders are at work. He has explored the deposit to a depth of six feet and reports that it improves with the depth. He has sent samples of the clay to various pottery plants for testing.

The Everett Brick Company has been incorporated at Everett, Wash., by Walter Thornton, C. M. Chambers and Harry Schaffer. Mr. Schaffer, manager of the company, has secured the Wasson brick yard, at Rockefeller and 39th streets, which includes a fine bed of clay. The company will add new machinery and presses for making pressed brick. Other lines of clay work will be taken up later.

J. F. Uhlhorn, of San Francisco, is in Portland, Oregon, arranging to secure a site for a pressed brick plant to be erected at a cost of $45,000. He states that he hopes to have a new plant in operation by spring.

The Florence Brick Company has been organized at Florence, Arizona, by Geo. W. Smith and others, to engage in brickmaking. —Sunset.

The Robinson Clay Product Company, of Akron, Ohio, one of the largest corporations in the world, tells where they have found the best machinery for their purpose in the world, on page 688. This is expert testimony. —adv.

THE HARRINGTON AND KING PERFORATING CO.

PERFORATED STEEL FOR CLAY SCREENS.

Samples or blue prints with prices furnished on request.

For Chute or Gravity Screens, Shaking or Vibrating Screens, Revolving Screens, Dry Pan Screens.
For Cleaning and Grading Clay, Shale, Sand, Cement, Coal, Stone, Etc.
For Pallets or Trays, Car Bottoms, Drying Floors, Conveyor Bottoms, Separators, Etc.

NEW YORK OFFICE
No. 114 Liberty St.

No. 231 North Union Street,
CHICAGO, ILL., U. S. A.

RODGERS FOR DRYERS

MONEY

is what we are all working for and we wouldn't, any of us knowingly miss a certainty of making more of it or making it faster.

It's time for you to realize that you are missing just such a certainty if you are not using the waste heat from your cooling kilns for drying your brick, according to the Rodgers Waste Heat System of Drying.

Your waste heat, PROPERLY UTILIZED, means MONEY to YOU—faster and more of it.

If you could use the money, use your waste heat.

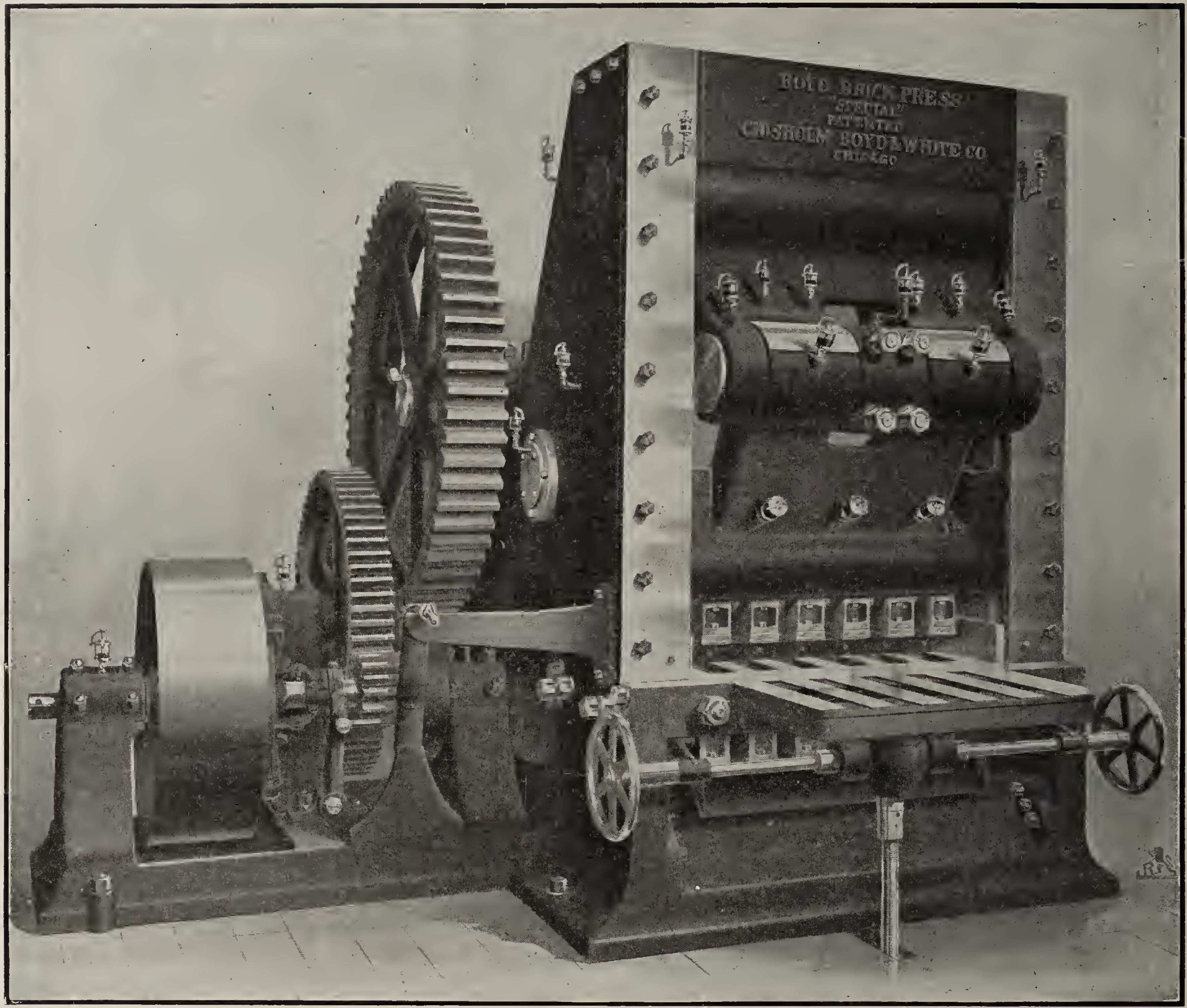
L. E. RODGERS ENGINEERING CO.

Waste Heat Dryer Specialists.
Brick Works Engineers.

303-305 DEARBORN ST. CHICAGO.

The Boyd Brick Press

Six-Mold "Special."



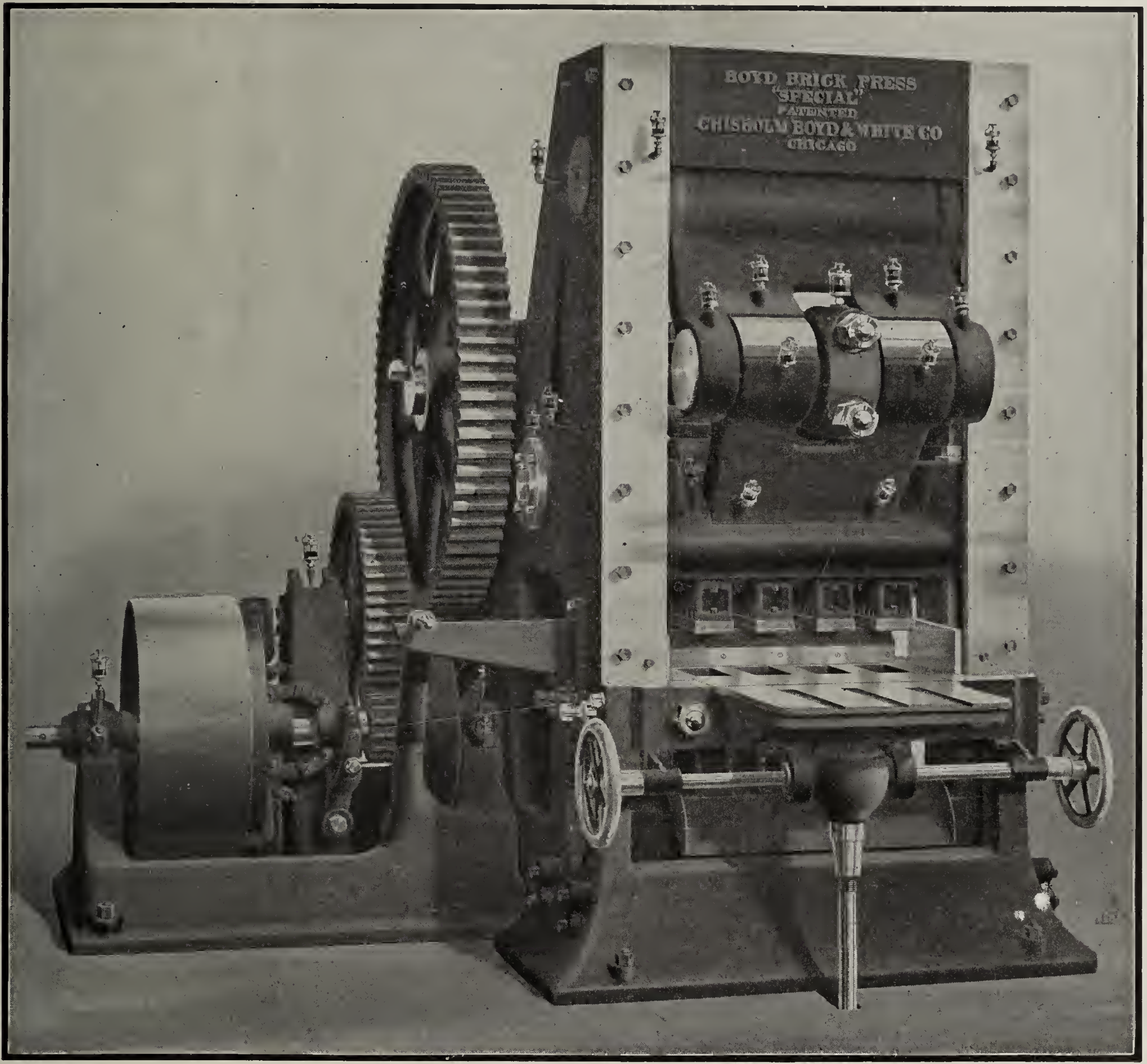
The Boyd Brick Press "Special" has enormous strength and great durability; it is compact; the adjustments are convenient; it operates quietly and smoothly; the workmanship and material are of the best; the design ingenious. It is a masterpiece, embodying the most perfect application of scientific and mechanical principles to the art of brickmaking. Correspondence solicited.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts. CHICAGO, ILL.

The Boyd Brick Press

Four=Mold "Special."



THE BOYD BRICK PRESS exerts greater pressure, holds it longer, puts more clay into brick, and makes stronger brick than any other Brick Press made. Especially adapted for working shales, and is the only successful machine for making fire brick.

ALL BOYD PRESSES are fitted with our IMPROVED PATENTED MOLD BOX, the liners of which are made of the hardest and toughest known metal, which can be reground at low cost when worn. The molds can be changed in a few minutes.

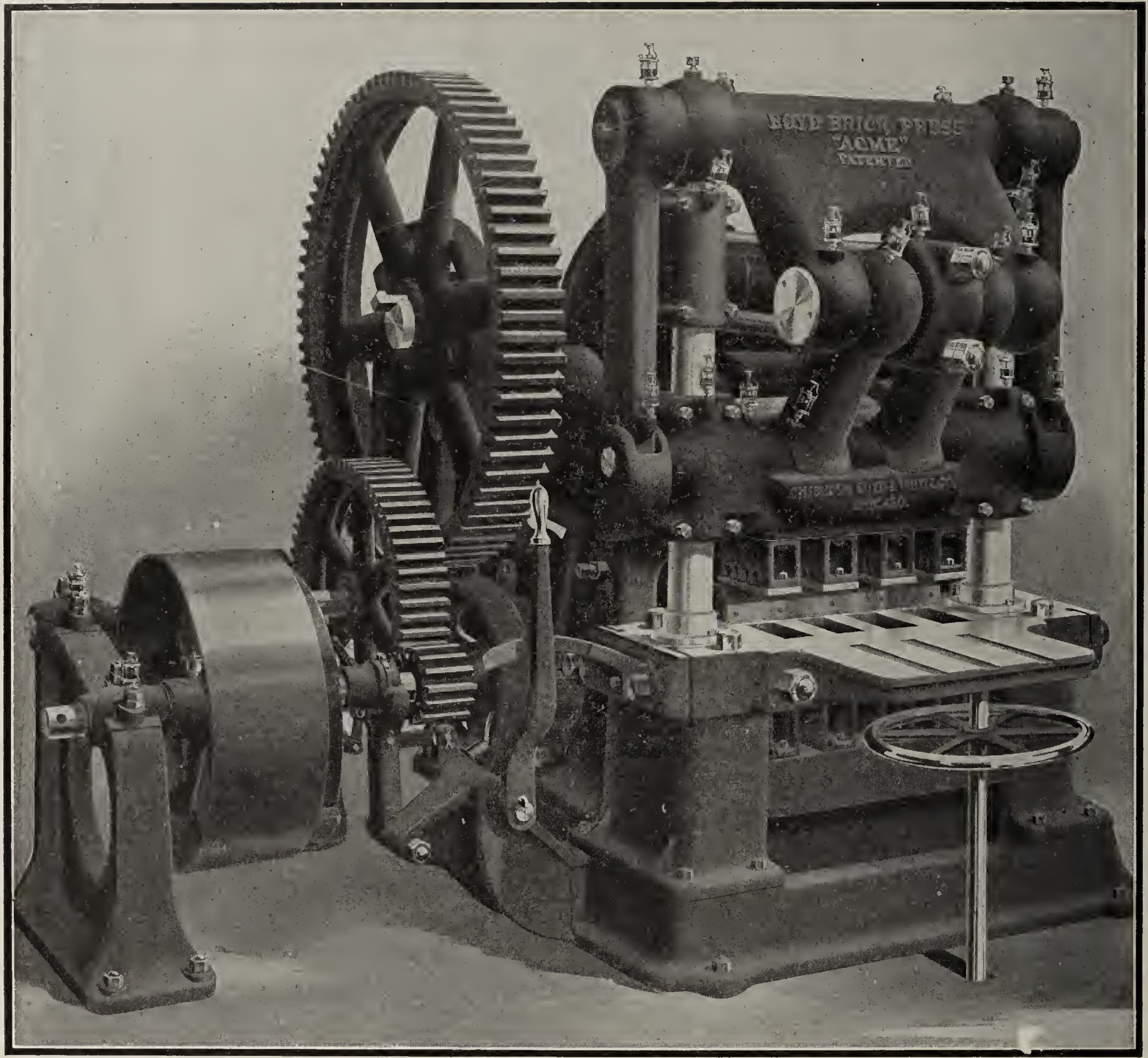
ITS RECORD: More Boyd Presses in actual operation than of all other Press Brick Machines combined. Write for General Catalogue No. 15.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts. **CHICAGO, ILL.**

The Boyd Brick Press

Four=Mold "Acme."



ITS NAME A GUARANTEE.

The Four-Mold Press above illustrated is our latest improved machine of this design. Over ONE HUNDRED now in use. Especially adapted for working shales.

THE BOYD BRICK PRESS was the standard at the start, and is the standard now. Steady progress, merit and improvements have kept it at the front.

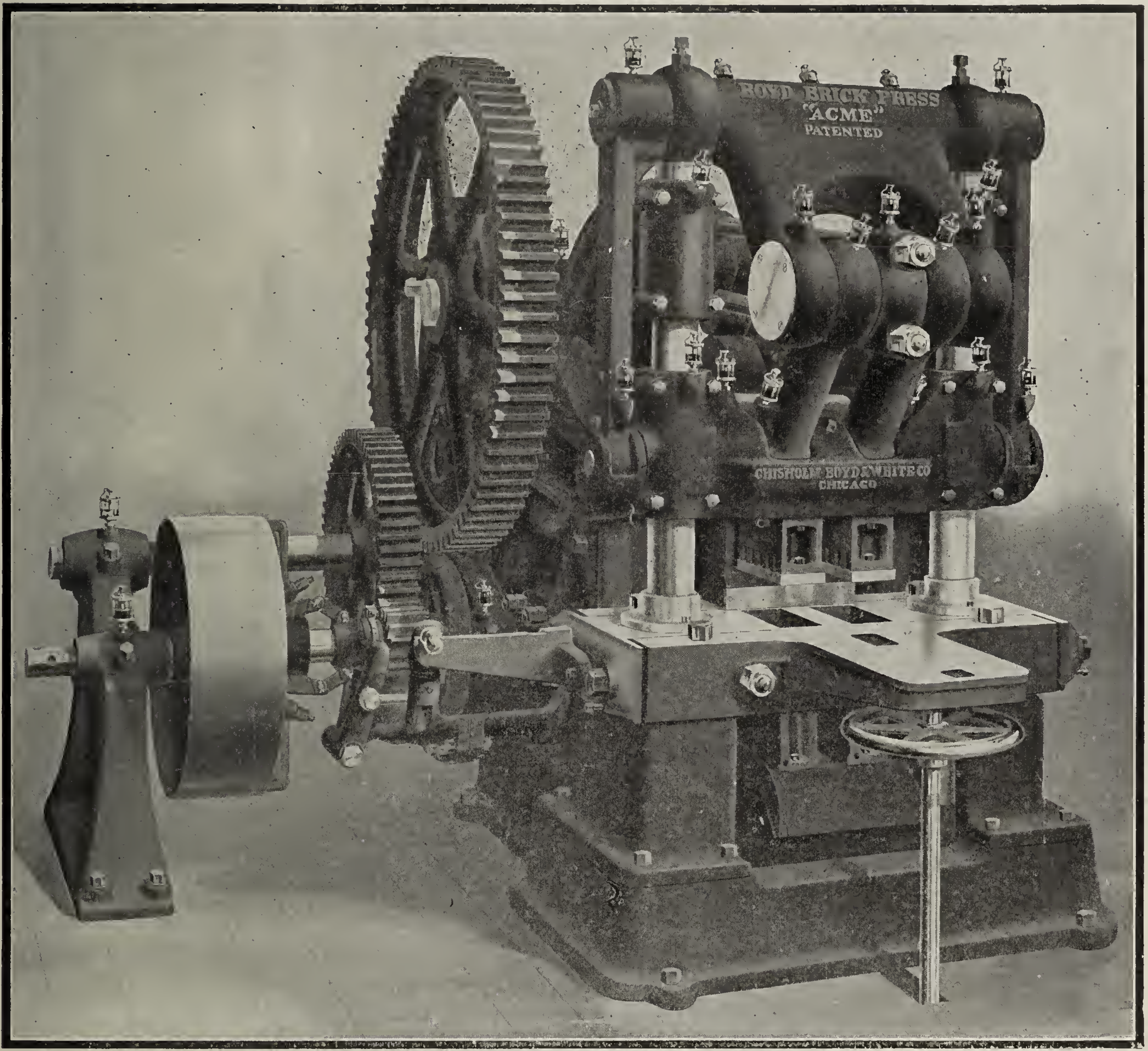
We will send to any responsible party a BOYD BRICK PRESS ON TRIAL under the broadest and safest guarantee. We take the machine back if not satisfactory.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts. CHICAGO, ILL.

The Boyd Brick Press

Two=Mold "Acme."



THE TWO-MOLD PRESS, above illustrated, is especially adapted for Brick Plants of small capacity, and for making ornamental and shape bricks it has no superior.

BRICK PRESSES are too costly to experiment with. EIGHTEEN YEARS' practical experience back of each Boyd Press.

Brick Plants designed and equipped by us have the highest reputation for efficiency. They are modern, up-to-date, compact, convenient in arrangement, and are not encumbered with unnecessary or useless machinery or appliances.

CORRESPONDENCE SOLICITED.

Chisholm, Boyd & White Company,

Office and Works, 57th and Wallace Sts. CHICAGO, ILL.

The Grath Special Brick Press

Patented.

Made in Two, Three, Four and Five-Mold Sizes.

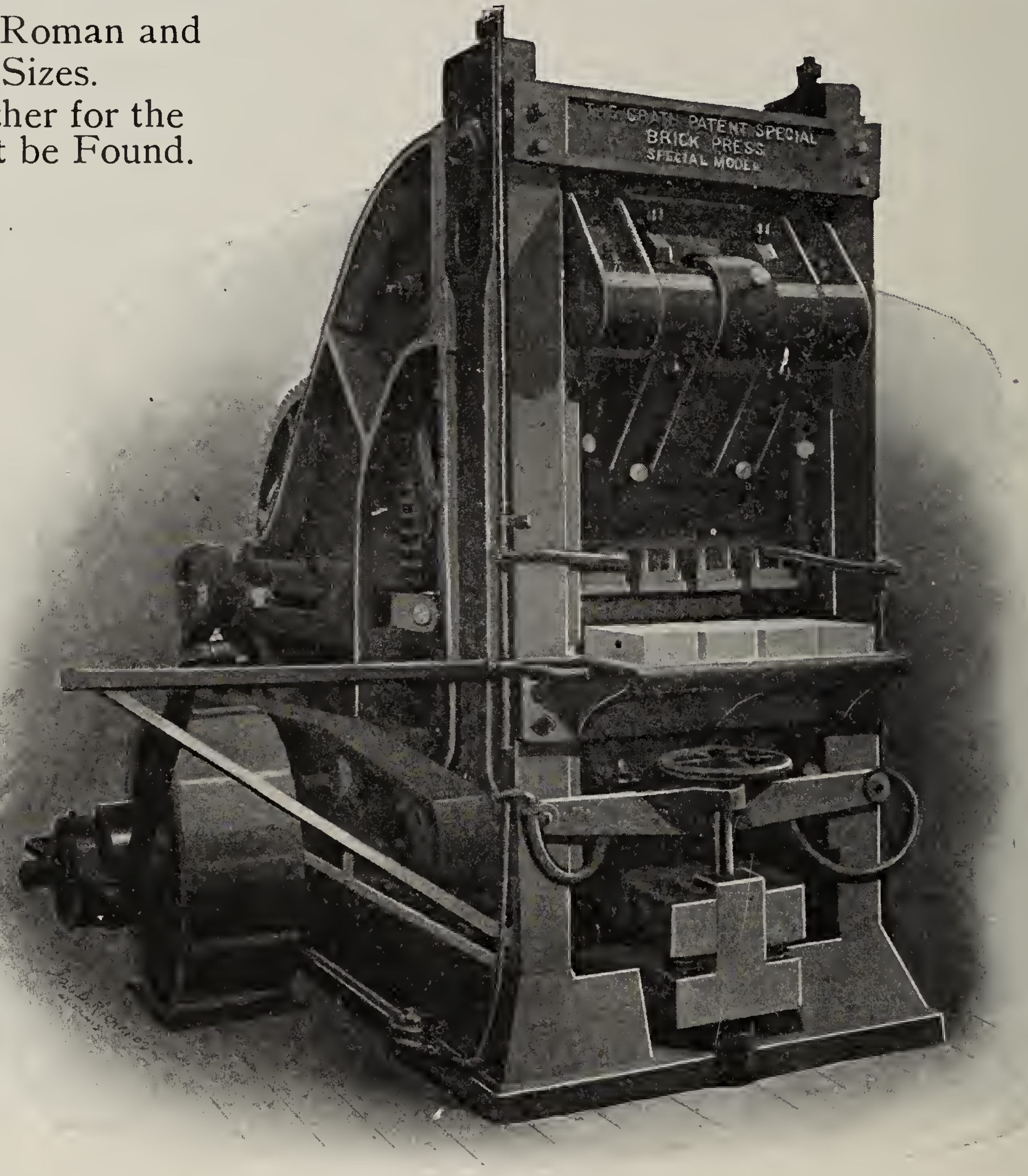
THE ONLY PERFECT BRICK PRESS

**For SAND-LIME and DRY CLAY BRICK
of Unequaled Quality.**

SPECIAL LARGE MODEL making four large Cuban Size Brick 12¼ in. x 5⅞ in. x 2¾ in.

For Standard, Roman and Norman Sizes. Seek No Further for the Equal Can Not be Found.

The Best is the Cheapest for the Manufacturer. Do Not Buy an Out of Date Press, Same as Built Twenty Years Ago. Buy a Modern Press And Keep up With the Times.



LATEST AND MOST MODERN PRESS.

Simplest Press Built.
This Means Less Parts to Wear and Smallest Repairs.

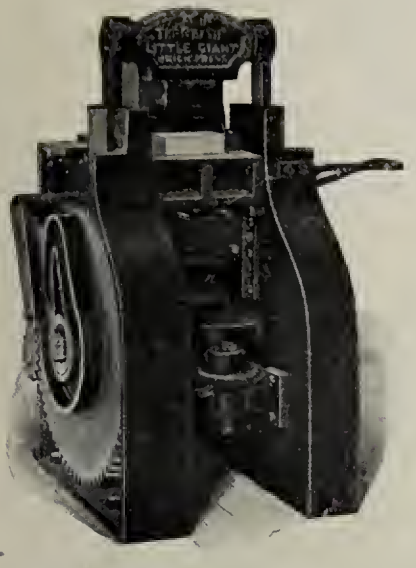
The Press of TODAY.

SIMPLEST, STRONGEST and BEST Brick Press ever built and Guaranteed to make better brick with greater pressure than any other Brick Press. Guaranteed unbreakable. No Side Strain. No Twisting of Crank Shaft. No Cross Breaking Strain. Not top heavy. No gears on outside of frame. ONLY PRESS having these features.

For further particulars write to

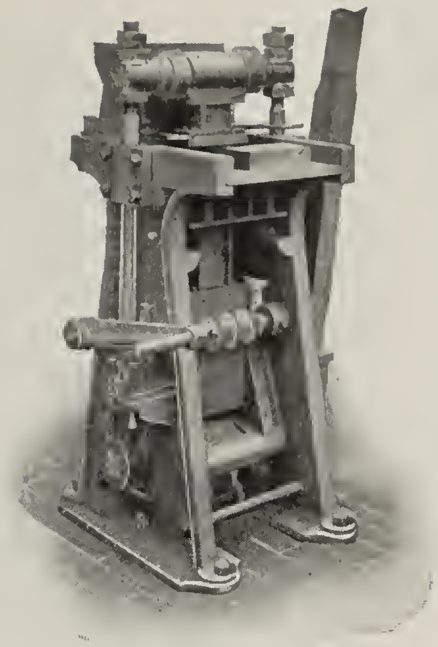
Illinois Supply & Construction Co.,

St. Louis, Mo., U. S. A.

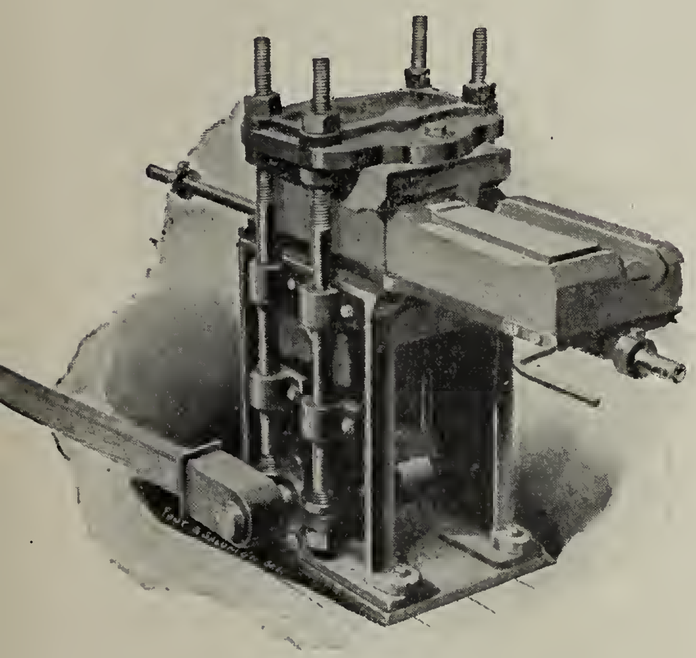


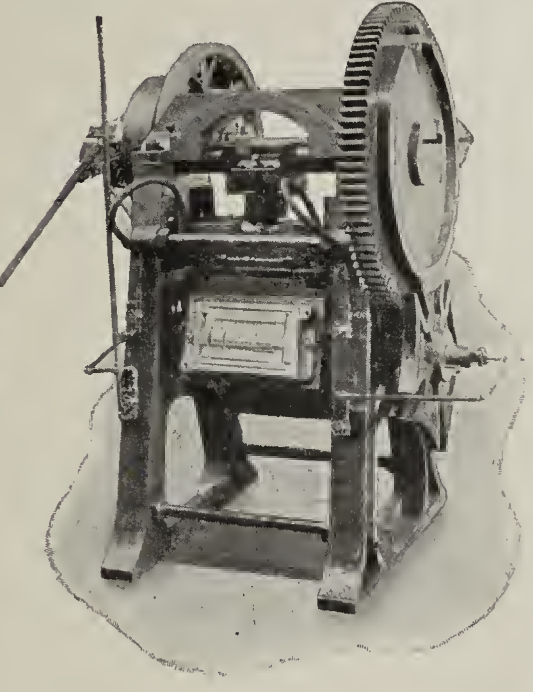
The Grath Little Giant Sand Lime Brick Press
Capacity-5000 per day

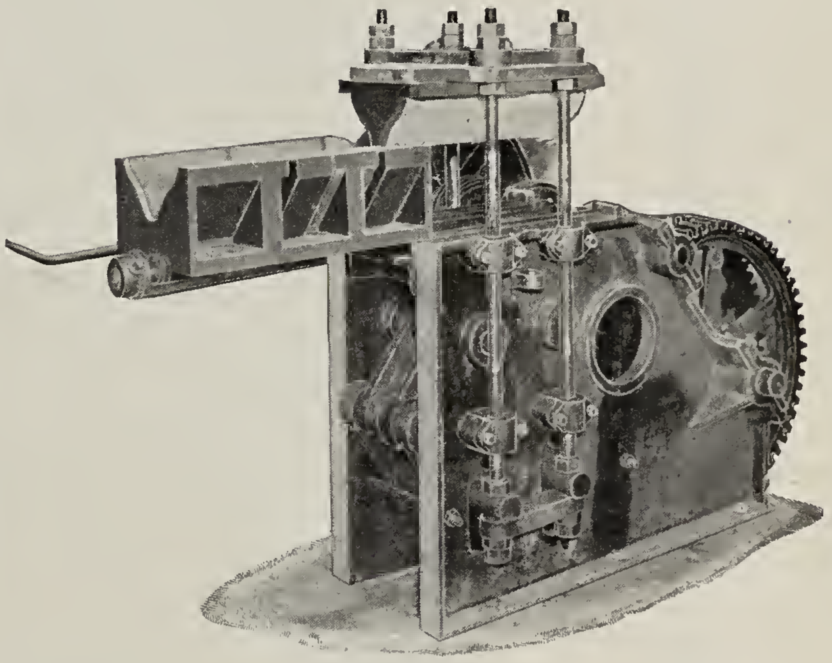
THE GRATH LITTLE GIANT TWO MOLD BRICK PRESS
For Fine Dry Press Brick.



The Grath Special Hand-Power Brick Press, for Plain and Ornamental Press Brick.
From Dry or Semi-Dry Clay or Sand-Lime.
Guaranteed against breakage.







GUARANTEED AGAINST BREAKAGE.

The Grath Special Hand-Power Roofing Tile and Trimming Press.
For Plaster or Metal Dies.
For Special Tile, Hips and Ridges.

The Grath Revolving Roofing Tile Press.
Strongest and Simplest Made.
For Plaster or Metal Dies.
Top Cross Head and Pentagon Adjustable.

The Grath Roofing Tile and Trimming Press.
No Roofing Tile Plant Complete Without This Press.
For Plaster or Metal Dies.
For Special Tiles, Hips and Crestings.

The New Grath Down=Draft Continuous Kiln.

Built cheaper in proportion than single kilns, and uses only half the fuel and gives better results with less labor. Fuel used, either wood, coal, producer, or natural gas, or oil. Can be built in sections or complete as desired. ***The Kiln of the Future.*** This kiln works and is operated like the ***ordinary single*** down-draft kiln; has furnaces on both sides as well as bags or flash walls, but you get ***advantage*** of all ***waste*** heat from your burning chamber, which you ***lose*** and throw away in your single kilns. This means better ware and cuts your time of burning and fuel bill in half. The waste heat is applied in ***same*** manner as the direct, through the furnaces up the bag and down through the ware. ***Simple*** and ***sure*** in operation. GUARANTEED.

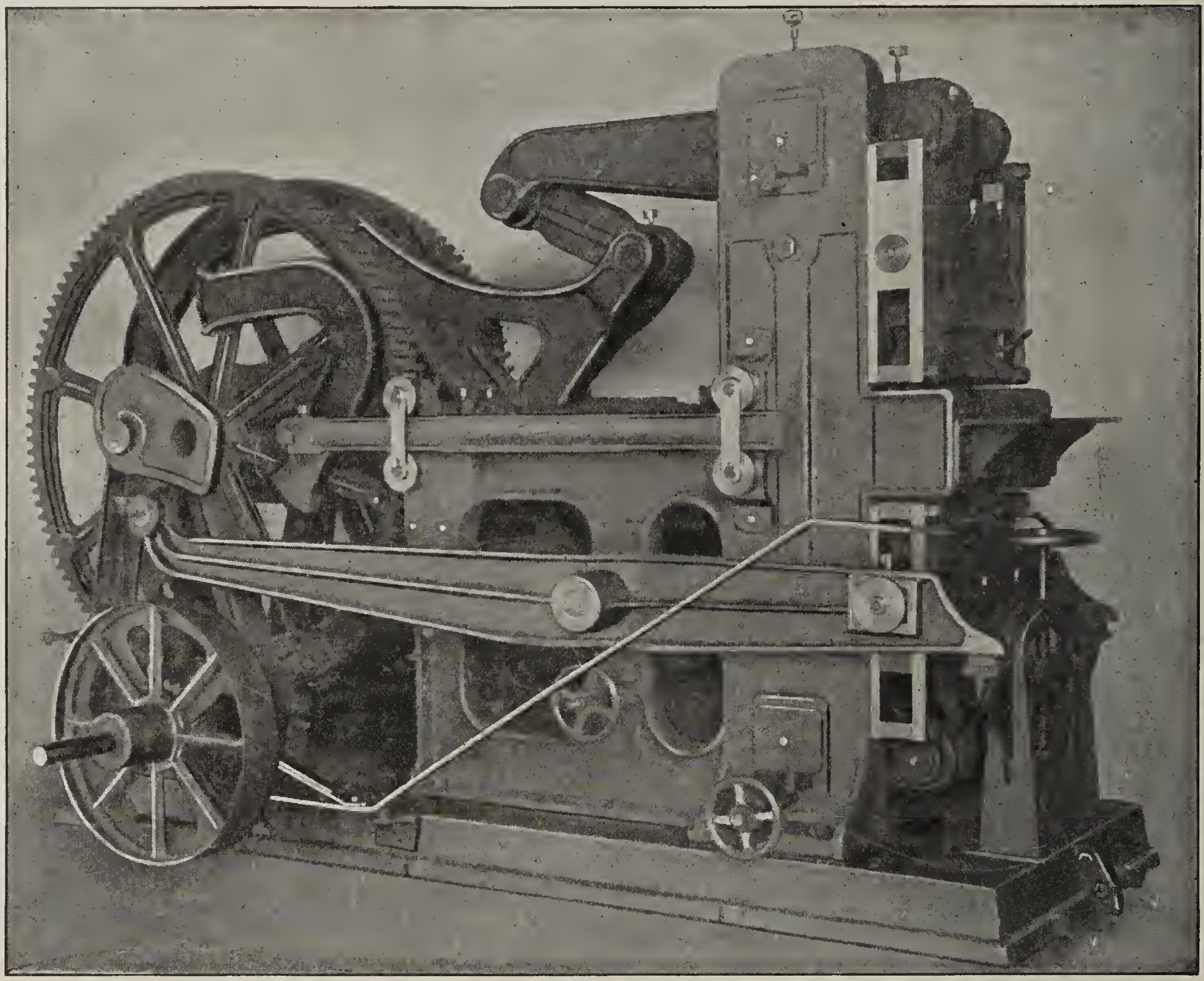
Lieber's Code.
Cable Address
GRATH, St. Louis.

Illinois Supply & Construction Co.,
TOBIN BLDG., ST. LOUIS, MO.

Long Distance
'Phone,
Bell, Main 235.

The Fernholtz Brick Press.

Simple—Durable—Economical—Guaranteed.



THE NEW FOUR-MOLD FERNHOLTZ.

Why is it the Best Dry Press Ever Built?

1st. **Because** it exerts greater pressure and holds it on the material longer than any other Dry Press.

2nd. **Because** it takes less power to operate it—we use a six-inch belt.

3rd. **Because** it is fitted with the Fernholtz Patent Mold Box, the best made.

4th. **Because** it costs less for repairs, and is so constructed that all parts are accessible.

5th. **Because** it presses the material from both bottom and top, producing a uniform sold brick without granulated centers.

6th. **Because** it is the only distinct cam movement press on the market.

We manufacture Hand Presses, Pulverizers, Mixers and a complete line of brickyard supplies.

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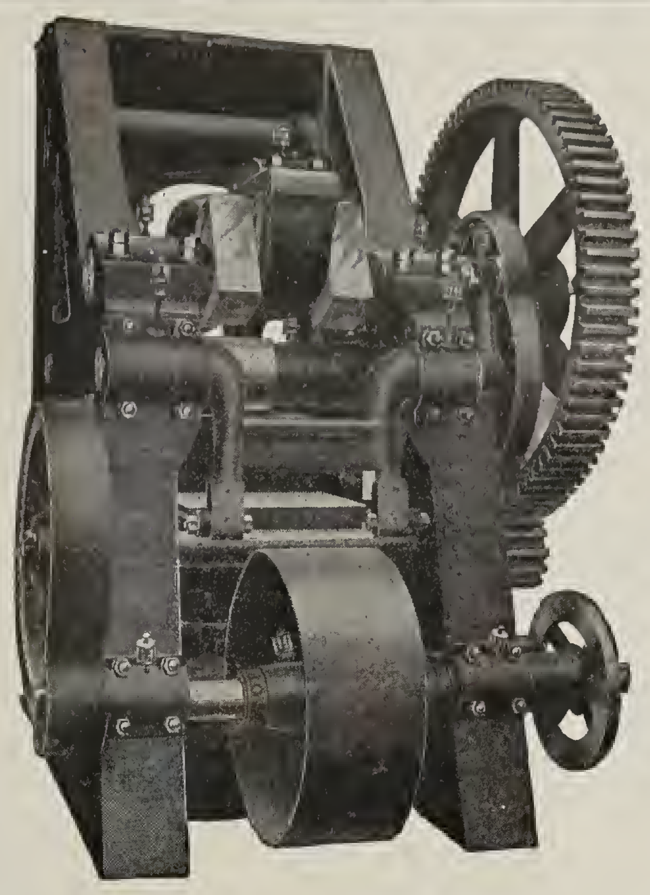
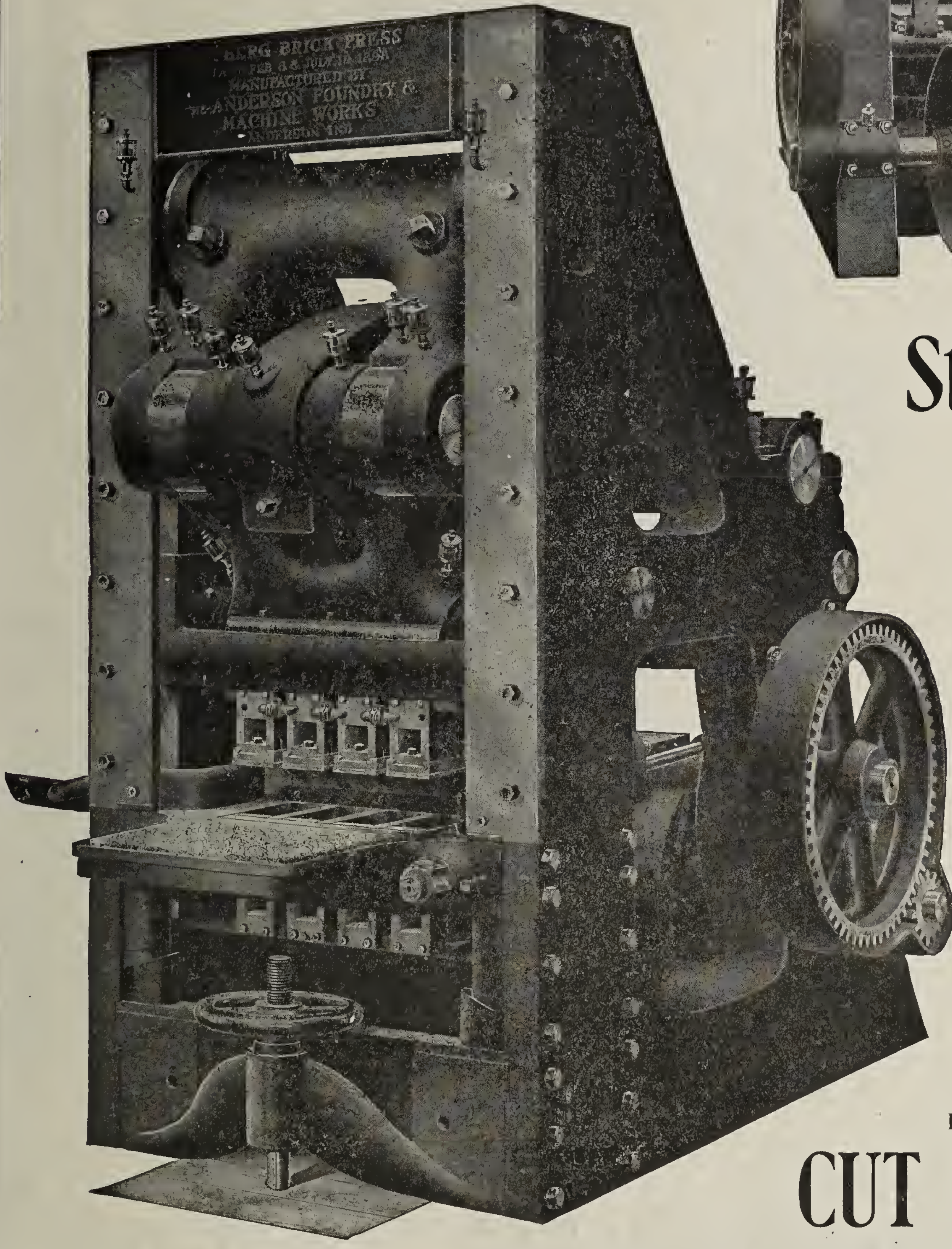
Boyle Avenue and Old Manchester Road, St. Louis, Mo.

New Model Berg Brick Press



Back View.



Still in the Lead

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One Step Further Forward.

Even stronger than ever, and all self-contained. Greater pressure and fewer working parts than any other machine. Simple, massive, compact, and

SHIPPED IN ONE PIECE.

Provided with

CUT GEARING

of either iron or steel, if desired.

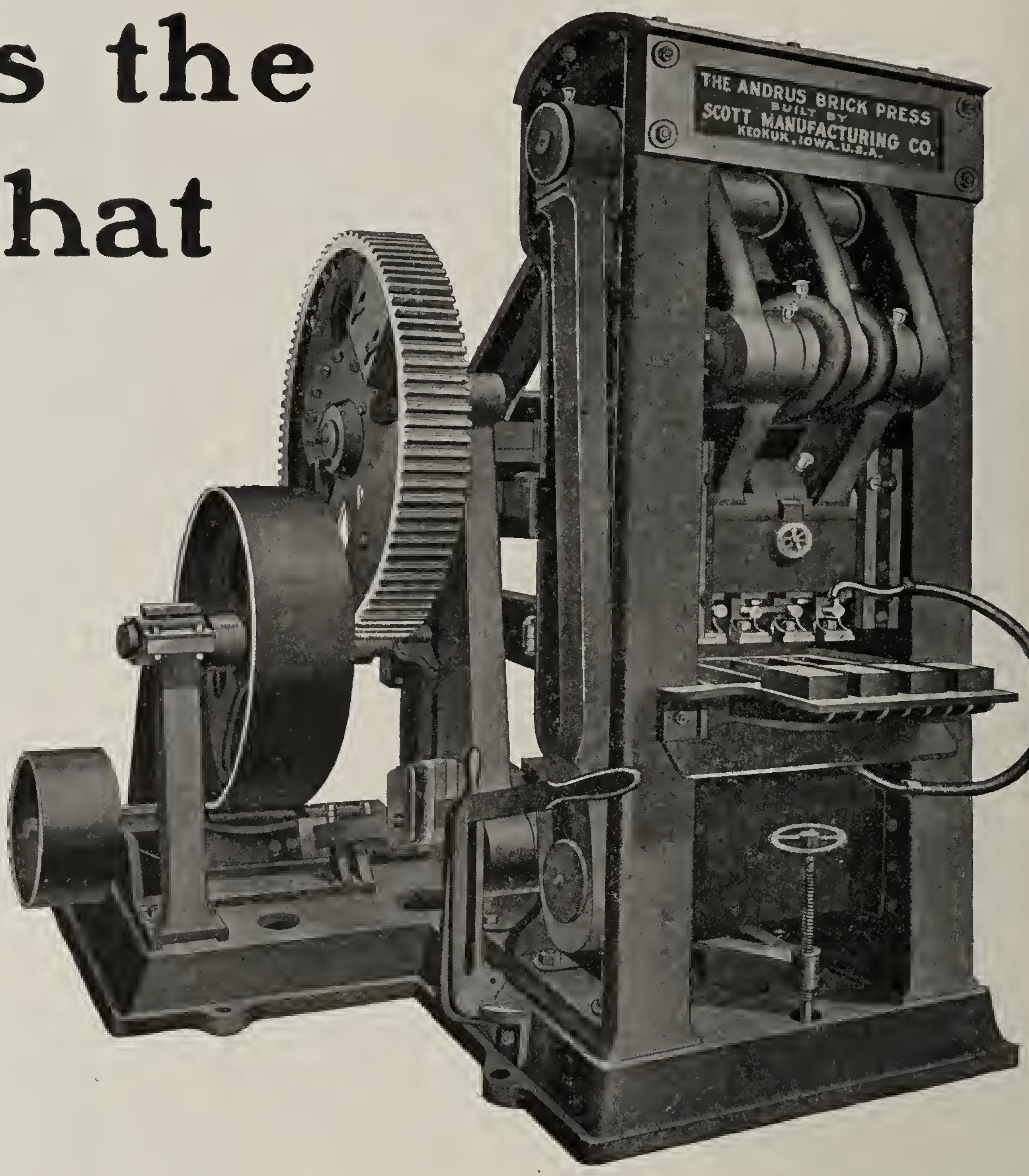
Sold by

CHICAGO BRICK MACHINERY CO.,
Great Northern Bldg. No. 77 Jackson Blvd. Chicago.

Manufactured by

Anderson Foundry & Machine Works,
ANDERSON, IND.

This is the Press that Scott Builds



The Andrus
4 Mold
Press.

Improved.

Up-to-Date.

Over One Hundred in Successful Operation.

Twenty of them right here in the St. Louis District, some of 'em have been here from 12 to 20 years. Buy a Press with the record the Andrus has and you will never have any regret.

Prices for the Asking.

Scott Manufacturing Company,

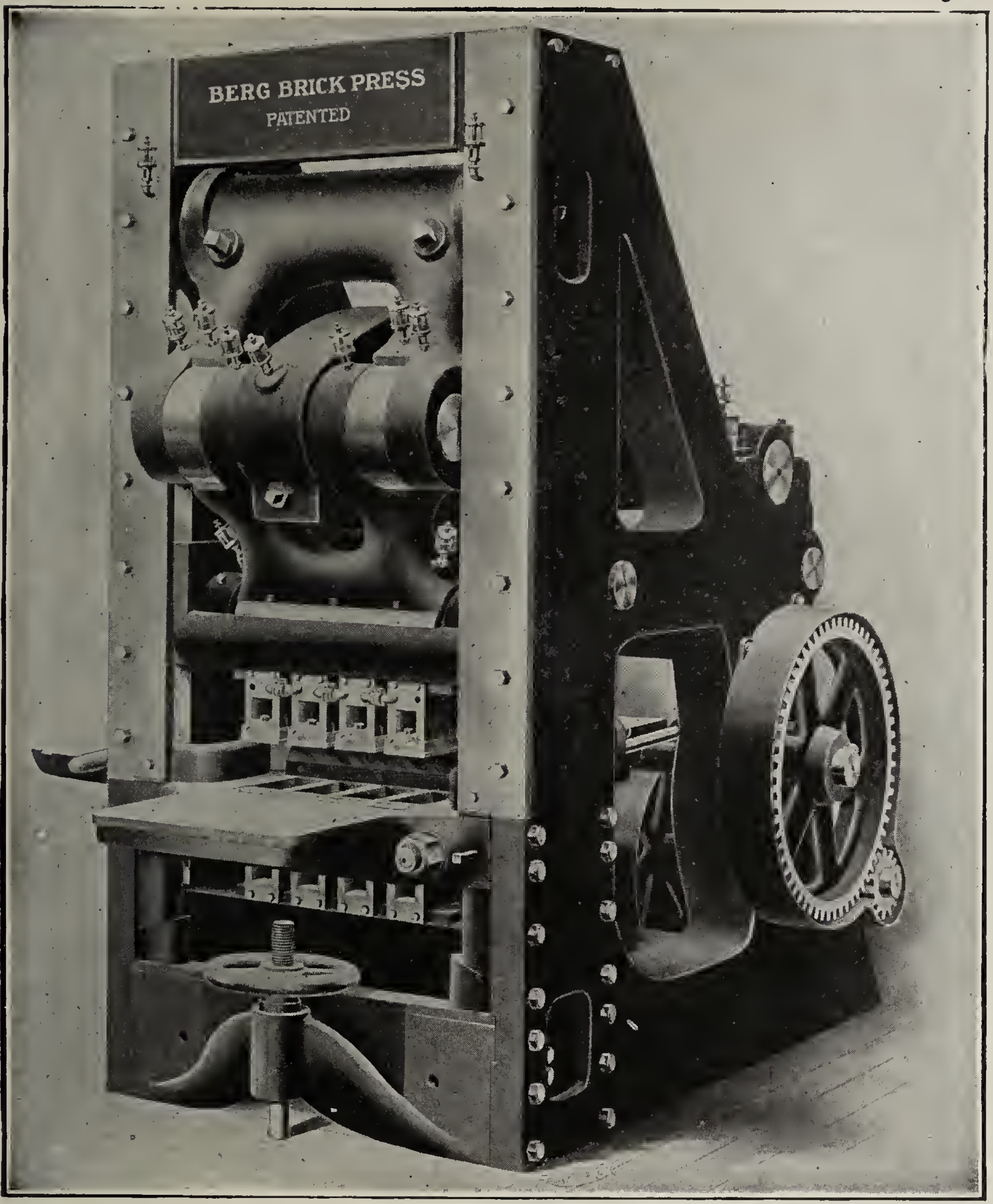
421 Olive Street, St. Louis, Mo.

WHAT'S IN A NAME?

BERG

B — SIMPLICITY STRENGTH DURABILITY
E — ACCESS TO ALL PARTS
R — GREATEST PRESSURE
G — BEST PRODUCT

The "Berg Press" is The Highest Development in The Art of Brickmaking Machinery, so Pronounced by The U. S. Government.



IMPROVED BERG BRICK PRESS.

THE BERG PRESS EXCELS
for
Shale Pressed Brick.
Clay Pressed Brick.
Sand-Lime Pressed Brick.
Sand-Cement Pressed Brick.
Fire Brick.

THE BERG PRESS
Gives Three Distinct Pressures:
Result is,
No Granulated Centers.

THE BERG PRESS
Has All Working Parts Above
Clay Line.

THE BERG PRESS
is fitted with "The Berg Patented Mold Box"—the Delight of brickmakers, and which many Others have tried to Imitate.

All Sizes and Shapes
Can be Made.
Molds Can be Changed in a
Few Minutes,
Owing to the
Simple Mechanical
Construction.

Cut Gearing, and many other steps forward in ***Improvements,*** and built of the ***Highest Grade of Material and Workmanship. Fully Guaranteed*** as to its ***Success.***

Manufactured by its Inventor in Toronto, Canada, exclusively. Also all equipments for Pressed Brick Plants to make ***Sand-Lime Brick, Sand-Cement Brick, Shale Brick, Clay Brick*** and ***Fire Brick.*** Correspondence solicited.

A. BERG & SONS,

Mention The Clay-Worker. Manning Chambers, TORONTO, ONT., CAN.

DRY PRESS BRICK MACHINES

Reliance Dry Press
The Machine of the Future.

OLD STYLE TOGGLE MOVEMENTS SUPERCEDED BY NEW AND BETTER PRINCIPLES.

THE ONLY MACHINE not using the Toggle Movement.
THE ONLY MACHINE applying Pressure from the Bottom.
THE ONLY MACHINE making a Uniformly Pressed Brick.

Only Machine Making Brick Without Granulated Centers.

Every Brick is a Face Brick. 4 Mold Press 20,000 per day. 6 Mold Press 30,000 per day. Adjustment permits any pressure desired (a feature peculiar to the ***Reliance***). Cheapest because having fewest parts. (Also cheapest to keep in repair.)

SIMPLE
STRONG
EFFICIENT

We Design and Equip Dry Press Brick Plants Complete.

WRITE TODAY FOR PARTICULARS. **SEND MATERIAL FOR SAMPLE BRICK.**

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The Reliance Machine and Tool Works,

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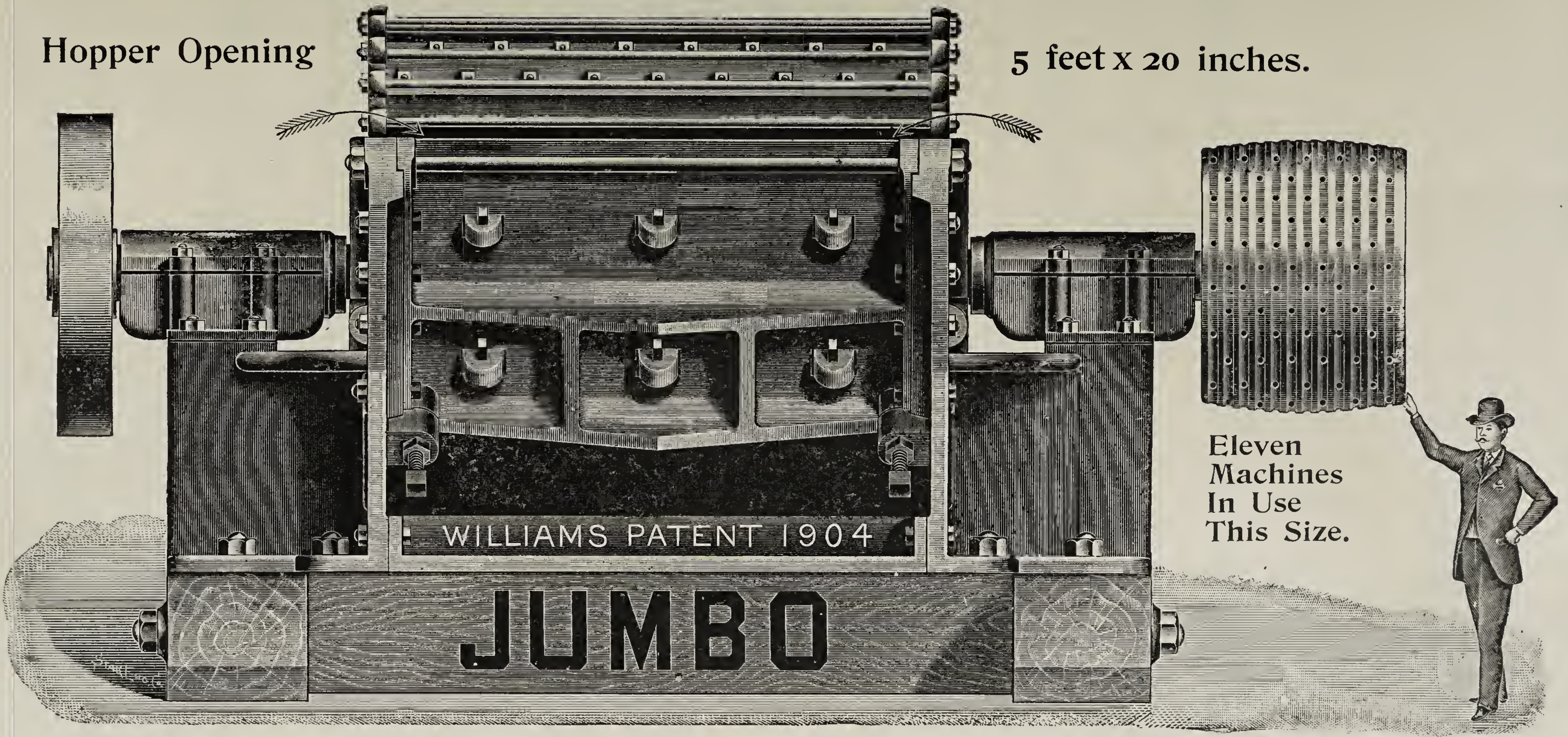
Our JUMBO SHALE CRUSHER and FINISHER To PUG MILL or DRY PRESS.



Hopper Opening 5 feet x 20 inches.

Eleven
Machines
In Use
This Size.

Weight, 13 Tons. Capacity, 100,000 Brick in 10 Hours.
Over 1,000 of Our Various Machines in Daily Operation.

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PRESTON BRICK COMPANY,
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Vitrified Shale Paving Brick,
SEWER AND HARD BUILDING BRICK.
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T. B. McAvoy, Pres. and Treas. John C. McAvoy, Sec. & Gen. Man.

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SHAWMUT VITRIFIED PAVING BRICK WORKS,
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Vitrified Shale and Fire Clay Paving Bricks and Blocks.
Burned in Yates' Patent Kiln.
Samples and Prices on Application.

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Street Paving **Brick and Block.**
Samples on Application.

PAVING BUILDING · BRICK AND BLOCK · SIDEWALK FOUNDATION
The Barr Clay Co.
C. C. Barr, Pres. - Streator, Ill.

Western Brick Co.,
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Western Pavers, Impervious Red Building Brick Wire Cut and Repressed.
Capacity, 60,000 Yearly. Five Railroads.

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VITRIFIED PAVING BLOCKS, CHOCOLATE-RED BUILDING BRICK.
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DECKMAN & DUTY,
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How to Properly Construct Brick Streets.

Drop us a postal and we will send you free of charge a complete set of

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Successors to

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Berlin Vitrified Brick that Withstands all Acids.

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MANUFACTURERS OF ALL SHALE

PAVING BLOCKS and PIONEER BUILDING BRICK.

Our leading brands are CULVER BLOCKS, WABASH STANDARDS, "SPECIALS," for crossings on macadam streets, GUTTER BLOCKS, COLUMBIAN SIDEWALK BRICK and PIONEER BUILDING BRICK.

Our material has for nearly fifteen years successfully stood the heaviest traffic of Indianapolis, Terre Haute. East St. Louis and dozens of other large cities of Indiana and Illinois. We ask investigation and comparison by those seeking the best paving material. Samples furnished on application.

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Clinton Paving Brick Company,

Manufacturers of the Highest Quality of

Paving Brick

Which are offered to the municipalities of the Central States under positive guarantee as to wearing quality. None better.

Prices and samples sent on application.

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Do You Want Clay?

WE OWN AND OPERATE EXTENSIVE DEPOSITS OF THE VERY BEST GRADES.

Fire Clays, Terra Cotta Clays, Kaolin, and Fire and Moulding Sands.

Have been in the business for TWENTY-FOUR years, and are prepared to meet every reasonable demand. Unsurpassed shipping facilities. Prices and samples free.

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HAS the largest and best equipped plant in the United States for the manufacture of Paving and Sidewalk Brick. The Galesburg Paving Brick have a reputation second to none, and this Company points with pride to its record for quality of material and its methods of conducting its business.

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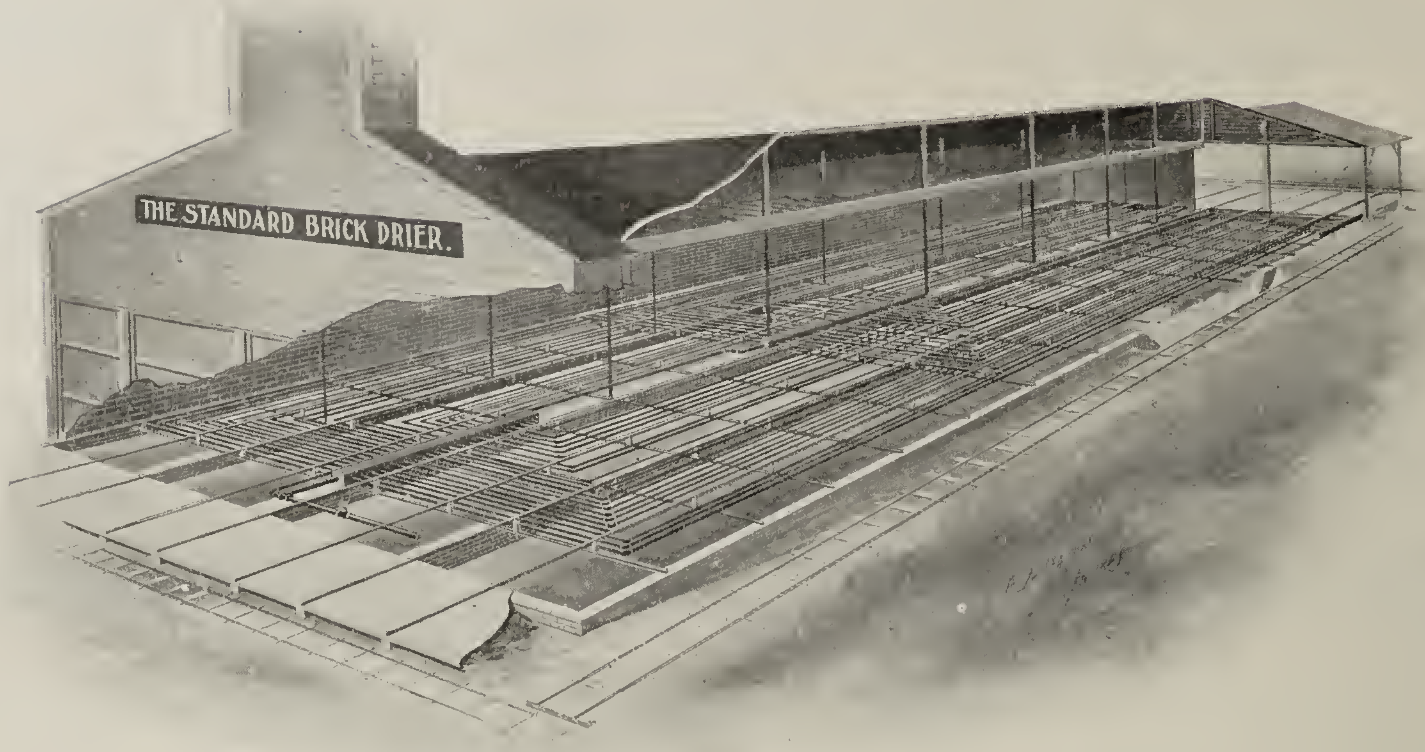
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Let Your Exhaust Steam Do the Drying!

Why spend your good money for fuel when you can dry your product, in the daytime, with exhaust steam?

In its effectiveness in utilizing exhaust steam for brick drying, the new Heating System of

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is some distance ahead of anything you ever saw in this line. And that is just one of the ways The Standard Drier makes money for you. Having fewer manifolds and steam joints than any other similar Drier, our equipment costs you considerably less at the outset. Then you don't have to do a lot of expensive excavating to install this new system, because ALL the piping is on ONE LEVEL.

Any pipe or fitting can be removed and replaced again, if necessary, without in the least disturbing any other pipe. Just look at the above illustration and see how the novel arrangement of the system makes it adaptable to the requirements of ANY and EVERY nature of clay. Another point: The entire Heating System rests on steel cross ties. And still another: The whole heating surface is right where it will do the utmost good.

Isn't this the Drier that's needed at your plant?

Estimates and full detailed description furnished on request.

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ALL TRAINS VIA WASHINGTON.
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WITH STOP-OVER PRIVILEGE.

MOST DIRECT ROUTE, BEST SERVICE TO

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Rails, Steel Ties, Portable Track, Switches, Frogs, Turntables, Wheels, Axles, Dryer and Steel Dump Cars.

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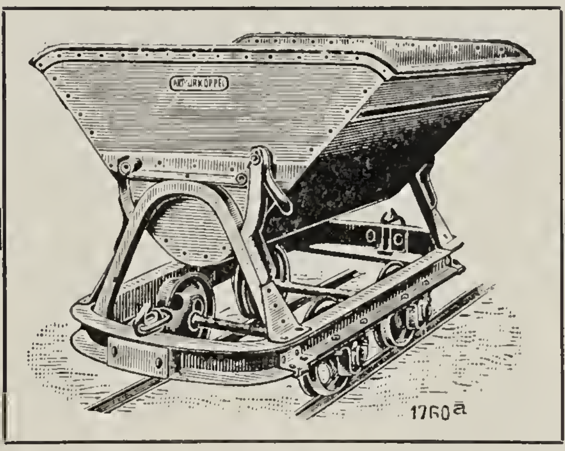
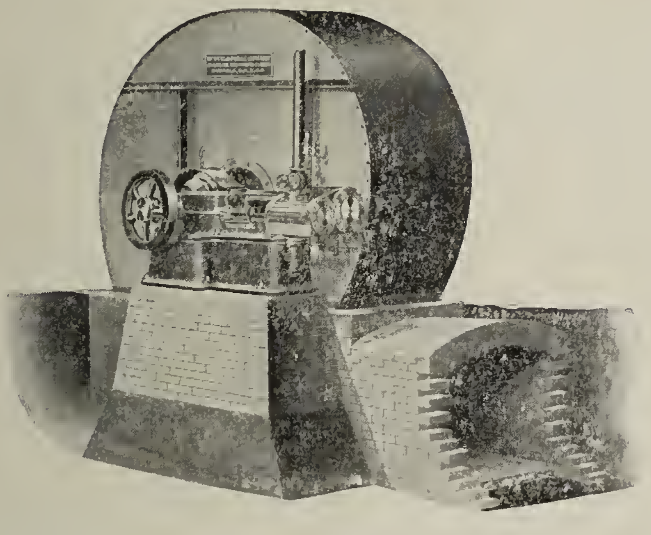


BUFFALO WASTE HEAT DRYER.



"Buffalo" Waste Heat Fan Direct Connected Engine Bottom Horizontal Discharge.

The first **WASTE HEAT DRYER** bore the name "BUFFALO." Economy is the watchword and in the third of a century since we began solving drying problems, there has been steady engineering progress.

"BUFFALO" WASTE HEAT FANS take the WASTE HEAT from the kilns and deliver it to the drying chambers, which can be automatically kept at any temperature and humidity. "BUFFALO" FANS have water-cooled bearings where necessary.

APPLICABLE TO BRICK, TILE AND TERRA COTTA PLANTS.

Our thirty years of success is due to a constant study of clays.

Write, stating requirements, and ask for catalog.

BUFFALO FORGE COMPANY, BUFFALO, N. Y., U. S. A.

CANADIAN BUFFALO FORGE COMPANY, MONTREAL, CANADA.

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Advertising rates in this Column 25 cents a line, or 4 cents a word each insertion; about seven words make a line. Cash should accompany the advertisement to insure insertion. No ad inserted for less than $1.00.

FOR SALE—Jeffrey Swing Hammer Pulverizer; practically new. Price $700.
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12 1 d Milton, Ont.

WANTED—To buy or lease a brick plant having shale or fire clay raw material and round down draft kilns. Address
12 tf d E. & E., care Clay-Worker.

WANTED—Experienced brick burner to burn nights, down draft kilns, large plant near Washington. Must be sober and industrious. Address Lock Box 252,
12 1 d Alexandria, Va.

FOR SALE—A going coal mine, with 24-in. fire clay bottom. Utilization of the fire clay would make this a highly profitable proposition. For particulars, address
JEROME A. TUCKER,
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FOR SALE OR RENT—On easy terms to the right man, a vitrified brick and tile plant. Was operated last season. Will take pay in product of plant, or trade for improved farm. Inquire of
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One New Haven soft mud brick machine.
One automatic sanding machine.
One steam dredge, shovel ½ yd. capacity.
Will sell at great sacrifice.
OGDEN BRICK CO.,
12 1 d Binghamton, N. Y.

WANTED—A position as manager or superintendent of brick or tile plant, by a young man of good habits who has spent most of life in clay business. Permanent position desired. Can furnish best of references. Address MANAGER,
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BRICK PLANT FOR SALE.

Modern, stiff mud, shale brick plant in the best city in Illinois; capacity 40,000 per day; can with little expense be increased to 60,000; nine round down draft kilns; very little competition; demand always exceeding production. Good reasons for selling. Snap; investigate. Address
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WANTED—Superintendent for a stiff mud and dry press brickyard of 50,000 capacity daily, now being erected in the South; fine, healthy location; good opening for the right man; must be able to take entire management of the works, and know how to handle machinery and men to advantage. Address L. D. C.,
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WANTED—Superintendent to take charge of terra cotta factory, on Pacific coast; manufacturing about 100 tons per month. Must be high class man, capable of making estimates and superintending manufacture. Applicants please state experience; give references and state salary expected. Address PACIFIC COAST,
12 1 d Clay-Worker.

FOR SALE—One Stevenson 9 ft. iron dry pan, almost as good as new.
THE EGGERS BRICK CO.,
11 tf d Cleveland, Ohio.

WANTED—Position as foreman, engineer or head burner with firm manufacturing dry press, stiff mud brick or drain tile.
Address M. S., care Clay-Worker.
12 1 cm

FOR SALE—Tempering machinery, consisting of three overhead geared, steam-driven Carnell tempering wheels, with necessary shafting, etc, complete.
WM. CONWAY,
12 1 d 5800 Walnut St., Philadelphia.

FOR SALE.

Brickyard site, 12 acres; good shale; 12-room house; railroad siding, machinery, etc. Address PENNA,
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WANTED—Working foreman for brick and drain tile (clay) plant in New York state; competent to take charge. One willing to take an interest in the business preferred. Address SANGER,
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WANTED.

Advertiser desires re-engagement as manager or superintendent of stiff mud or dry press face brick plant; long experience; A1 references. SUPERINTENDENT,
12 1 c care Clay-Worker.

FOR SALE—A complete stiff mud outfit, 30,000 capacity; 50 and 60 H. P. boilers, 50 H. P. engine, brick machine and five track steam drier. Now running and in good order.
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FOR SALE—At a bargain. A complete brick plant in good condition, with 40 acres good clay and a ¾-yd. steam shovel in pit. Reasons for selling, death of my husband, F. J. Campbell.
MRS. F. J. CAMPBELL,
12 2 cm Ponchatoula, La.

FOR SALE.

Fine opportunity. Money-making, 30,000 capacity, soft mud brickyard in best building town in Indiana. Can't supply demand. Owner has larger interests. Easy terms. Write for details.
TERRE HAUTE P. BRICK CO.,
12 1 d Terre Haute, Ind.

FOR SALE—Finely equipped shale clay brick and tile plant of 20,000 capacity, at Boone, Ia., in coal field; 144 car dryer, Corliss engine, Freeze mill, dry pan, seven kilns; all in good shape and now running, doing fine business. Will be sold for less than it is worth, as the owner, after seventeen years in the business in this location, is forced to quit on account of loss of eyesight, and must sell.
J. B. McHOSE,
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WANTED—Foreman. We are looking for an energetic man, one who understands machinery and the making of dry pressed and stiff mud brick, 20,000 and 50,000 capacity respectively. We use electricity for power. We want a hustler, one who can keep things moving and bring results. Must be sober and reliable. Knowledge of burning not necessary. The right kind of man will find it to his advantage to look us up. Address DECEMBER,
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Address, MINN,
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WANTED—To correspond with all parties anticipating entering upon the manufacture of sand-lime brick. Can give valuable information and start you off right. Address SAND-LIME BRICK ENGINEER,
11 2 d care Clay-Worker.

Save hundreds of dollars, perhaps your business, by using our business system. Some fine bargains in clayworking plants. Write us if you wish to buy a good business in any part of the United States.
WESTERN CLAY DEVELOPMENT CO.,
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FOR SALE—One American Clay Machinery Co. stock brick machine, four trucks, dumping table, one lot of six brick molds. For $100 machine can be made as good as new. Price for lot, $250.
E. W. FACE & CO.,
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FOR SALE CHEAP.

One iron H. P. soft mud machine.
One iron steam power soft mud machine.
One hand repress.
One disintegrator.
One 35 H. P. boiler and one 25 H. P. engine.
Second-hand dryer cars for sale cheap.
All in first-class condition.
THE HORTON MFG. CO.,
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WANTED—Competent foreman to run fireproofing and roofing tile plant. Clay and machinery has proven satisfactory. Man must be competent judge of a day's work for all employes in their line. In answering this "ad," state previous experience and with what companies. Proprietors are practical clayworkers and will pay good wages and give permanent position to right party, but foreman must understand his business. SIMON BRICK CO.,
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FOR SALE—A successful and growing business. Brick manufacturing plant in Central Ohio. Thoroughly equipped and up-to-date. Owns in fee sufficient material to manufacture brick for many years. Located in city limits and directly on Belt Line connecting railroad with Pennsylvania and B. & O. railways. Buildings, kilns and machinery in first-class condition. Price, $50,000. Liberal terms. Capitalized at $150,000 and will inventory nearly as much. Makes pavers, cut blocks, enameled, pressed and common brick. More orders on hand than can be filled. Good reasons for selling. Agents protected. Address or call upon J. W. JENNINGS,
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BRICK YARDS FOR SALE.

Two prosperous yards on three railroads. Tracks run right to kiln; 5 brick machines; 155 acres land; 20 years' supply of clay. Foreman's house, boarding houses, barns, sheds, etc.; 10,000,000 brick capacity; 20 years established; 15 years under present management. Advanced age causes owner to retire with a competency. About $50,000 capital required. EDW. J. MURPHY CO.,
327 Main St., Corner Bridge,
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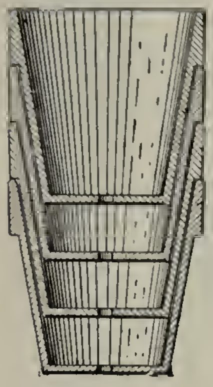
COX'S Special Drawn Coil Wire is
Unsurpassed for Strength and Durability.

Brick and Tile Cutting Wires For End-Cut, Side-Cut and Automatic Tables.

GEO. S. COX, East Liverpool, Ohio. Satisfaction guaranteed. Send for samples and prices.



Make Money

WITH THE ONLY SUCCESSFUL

Flower Pot Machine

(PATENTED.)

No expert workmen required.
Capacity in 10 hours:
6,000 two-inch Pots; 3,500 five-inch Pots;
4,000 four-inch " 2,000 seven-inch "
Write for Circular and prices.

The Rockwood Mfg. Co.,
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The Kiln of Kilns is the

"IDEAL"

A new type of down-draft continuous kiln for burning, in alternate or ANY chambers, enameled or salt glazed goods, terra cotta, facing and fire bricks, limestone, etc., with ONE-THIRD the fuel used in intermittent kilns.

No fuel comes in contact with the goods and an oxidizing or reducing atmosphere can be produced at will.

All progressive brick manufacturers must have this kiln.

For full particulars please apply to

J. OSMAN & CO., Ltd.,
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THE
WEBB WIRE WORKS

MANUFACTURERS OF
MUSIC WIRE NEEDLE WIRE
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We manufacture BRICK AND TILE CUTTING WIRE, drawn especially to withstand abrasion.

Send for prices of wire in coils.

Mention the CLAY-WORKER,
WHEN WRITING TO ADVERTISERS
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FOR SALE.

One Henry Martin common brick machine; seven Carnell represses; one 125 h. p. boiler. Address

PAUL W. WILLIAMS,
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FOR SALE.

One 9-foot dry pan, iron frame.
One revolving screen.

THE T. B. TOWNSEND BRICK AND CONTRACTING COMPANY,
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ENGINES AND BOILERS.

A large assortment of new and rebuilt engines and boilers, all sizes and styles, at low prices. Send specifications of your requirements and we will make you a special proposition.

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Books for brickmakers. Inexperienced workmen will find them a source of valuable information. "Brickmakers' Manual," $3.00; a practical treatise on the everyday details of brickmaking. "Clay Glazes and Enamels," $5.00; tells how to glaze and enamel brick, and gives valuable receipts. "The Clayworker's Handbook," $2.00; a manual for all engaged in the manufacture of articles from clay. "Clays," $5.00; their occurrences, properties and uses, with special reference to those of the United States. "Vitrified Paving Brick," $1.00; tells all about the best materials for and methods of manufacturing paving brick. "Tables of Analysis of Clays," $1.00; gives the analysis of many American and European clays. All or any of these books mailed postage prepaid, on receipt of price. Write for list of other valuable books for clayworkers. Address

T. A. RANDALL & CO.,
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FOR SALE.

Sixty acres best shale and fire clay land in State of Illinois, also large quantity of silica sand, therefore having all the requisites for making all kinds of clay products. Property adjoining leading trunk line and switching arrangements to three other trunk lines only two miles away: 60c. freight rate to Chicago. Shale has been thoroughly tested for pavers, face brick and sewer pipe, and fire clay has also been thoroughly tested, and vein runs from seven to fifteen feet, shale from sixty to eighty feet. Owners will join parties in putting up plant, or will sell outright. Address

F. G. SHEFLER,
4420 Ellis Ave., Chicago.

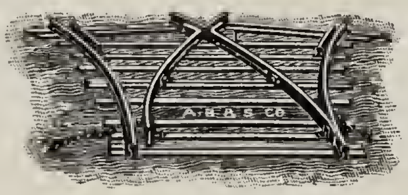
(Continued on next page).

FOR SALE.

One of the finest deposits of clay in the South. A great quantity, and the quality has been thoroughly tested and investigated by well known experts. Easy terms.
Address LOCK BOX 333,
7 6 m Hot Springs, Ark.

WANTED.

Clayworkers who are having trouble of any sort in the operating features of their plant, whether in the making, drying or burning, to know that my experience of twenty-five years enables me to give valuable practical advice that will prevent further loss and trouble, if skill and knowledge as a practical worker and chemist can accomplish that purpose. Terms reasonable and contracts made contingent upon success. Address J. J. KOCH,
5 tf L 3325 Caroline St., St. Louis, Mo.



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Right and left hand one, two and three way switches of various gauges, radius and weight rail, at special prices.
THE ATLAS CAR & MFG. CO.,
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FOR SALE
SECOND HAND AT A BARGAIN.

One "Premier" Combined Brick Machine, with side-cut brick die.
One "Benson's" Automatic Side-Cut Brick Table, with 12 ft. of off-bearing belt.
One Clay Conveyor, 14" belt, 30 ft. long.
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One High Speed Disintegrator.
About 12 tons of 12-lb. "T" Rail, with fish plates and ties.
250 double deck steel deck dryer cars.
One 200"x ¾ housed steel plate fan with wheel 10' dia. x 47" wide, inlet 76" dia., outlet 66"x66".

Machinery practically new, only used two months.
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10 3 dm

(See additional ads under Table of Contents.)

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New or Second-Hand.

Correspondence solicited.

H. S. SIMPSON,
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CHICAGO, ILL.

26-foot vein, covering 200 acres. Located on Chicago & Alton R.R., 70 miles north St. Louis. Miners and shippers of red, white mottled and yellow buff clays for all varieties of manufacture of front, face, enameled brick and terra cotta work, including the encaustic tile, semi-porcelain, pottery and fire brick, fire clays; also red mineral paint clay

Hicks Clay Co.

Grand Prize and Gold Medal, St. Louis World's Fair, 1904.

Prices and samples free upon request.

Correspondence solicited.

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H. C. WORCESTER Sec'y, Roodhouse, Ill.

Warwood Kiln Co.

SEMI-CONTINUOUS, ROUND AND SQUARE DOWN-DRAFT KILNS
MUFFLE KILNS and
DIRECT AND WASTE HEAT DRYERS.

Warwood's Semi-Continuous Kiln, the cheapest, simplest and most effective first-class kiln on the market. It combines all the advantages of the best type of single down-draft kilns with the fuel saving features of the continuous kilns.

It can be built either round or square and each kiln can be used individual or continuous, as desired.

Your present kiln, now constructed, can be easily and cheaply changed to Warwood's Semi-Continuous System, and in most cases your own style of kiln botttom can be used, and without any perceptible difference to its working features.

Warwood's Semi-Continuous System can be successfully applied to all kilns for burning all grades of Brick, Sewer Pipe or Fireproofing. In fact, anywhere a single down-draft kiln is now used.

In a correctly weighed test in a 100,000 capacity round down-draft kiln, we have burned all hard brick with 300 lbs. of coal per M, a saving of more than 60% of the fuel formerly used, and will guarantee to burn 95% hard brick.

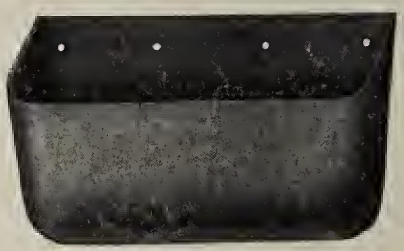
Warwood's Kiln will burn any kind of fuel that any ordinary down-draft kiln, either coal, oil or gas. Address:

WARWOOD KILN CO.,
BEAVER FALLS, PA.

Southern Address,
Augusta, Ga.

We Manufacture These Buckets
In All Styles, Sizes and Gauges.
Orders Shipped Promptly.

SALEM BUCKETS

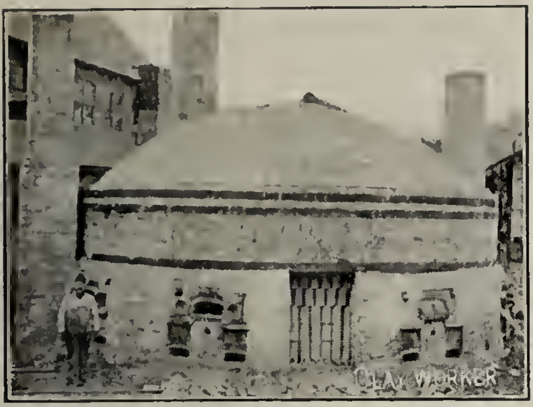


COLD ROLLED SPIRAL STEEL CONVEYOR.

We Also Make Shafting, Pulleys, Friction Clutches, Sprocket Wheels, etc.

WEARS BEST, Costs No More.
WE MAKE this Conveyor in All Styles and Gauges.

SKILLIN & RICHARDS MFG. CO., CHICAGO.



"Latest Improved Wonder of the Age."

I now propose to give all a chance to try "The Swift System" by remodeling one kiln or building one new one. Write for particulars to "The Kiln Doctor."

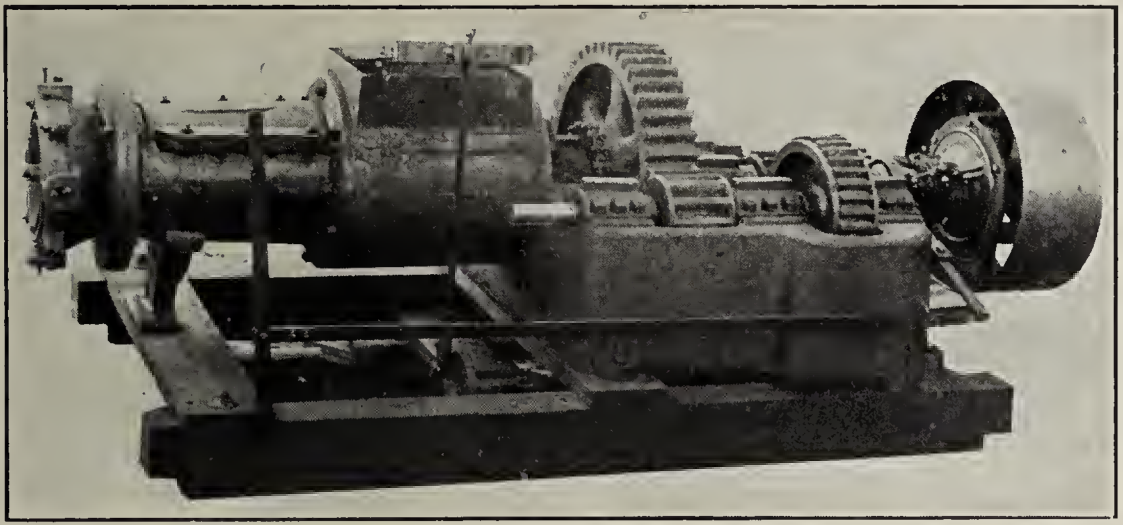
F. E. SWIFT,

514 West Fourth St., Dayton, Ohio.

MADDEN & CO.,

Successors to NOLAN, MADDEN & CO.,

Manufacturers of Brick and Tile Machines.



No. 5 Auger Tile and Brick Machine with our New Endless Belt Cut-off Table, which has no equal for handling tile of all sizes from 3 to 12-inch. This table has carriers which move with the tile, and can be readily and perfectly adjusted to any size tile.

Our Upright Tile Machines are unequaled for large tile, 10 to 24-inch. These machines are all sold on their merits, and warranted to do first-class work. We also manufacture Soft and Stiff Mud Brick Machines.

Full line of Tile and Brickyard Supplies kept constantly on hand. Get our prices.

MADDEN & CO., Rushville, Ind.

Brick Pallets.

It is the opinion of the best Manufacturers that the Pallet System is the most economical method for making bricks. White pine lumber is conceded to be the best and most economical material for pallets. We make them. A word to the wise is sufficient. Send postal card for circulars.

Mershon, Schuette, Parker & Co.,

Saginaw. East Side Mich.

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Established by the Legislature in 1902 at the

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RUTGERS COLLEGE.

NEW BRUNSWICK, N. J.

Has a modern and complete equipment for practical and theoretical instruction in the clayworking industries. Two courses have been provided: the regular course of four years; a short course of two years, designed for the young man who has had practical experience in clayworking.

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Instruction given in the Science, Technology and Art of the clayworking industries, brick, tile, terra cotta, white wares, artistic pottery and porcelain.

Tuition free to residents of the State of New York.

Catalog sent on application.

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Offers through its College of Engineering, full courses of instruction in Civil, Mechanical, Electrical and Mining Engineering, and in Architecture, Ceramics, Chemistry, Industrial Arts and Manual Training.

ITS DEPARTMENT OF CLAYWORKING AND CERAMICS, established in 1894, was the pioneer of its kind in America, and has been from the first successfully training men to overcome the technical problems of clay manufacture

Tuition is free. Laboratory fees are nominal Faculty of over one hundred instructors Equipment very extensive.

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DR. W. O. THOMSON, President.
Columbus, Ohio.

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FOR ALL USES.

LUMP, GRAIN AND GROUND

60-70% 70-80% 80-90% OXIDE.

CLAY WORKERS GOODS A SPECIALTY.

SAMPLES AND PRICES ON INQUIRY.

KENDALL & FLICK

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For cheap machinery the reader is referred to our 'For Sale" columns. We do not advise the purchase of cheap machinery. As a rule, cheap machinery is dear in the end, but for some places second-hand machinery answers a very good purpose. Those wanting experienced help will also find the "Wanted," "For Sale," etc., columns a means of satisfying their needs.

Expert Service for Sewer Pipe and Brick Manufacturers.

Make more money by engaging for a few weeks

ONE WHO KNOWS HOW.

Write for terms, date and reference. No Cure. No Pay.

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Largest Manufacturers in United States of

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Samples and estimates cheerfully furnished on application.

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Sole Importers in the United States of the

Precipitated K.B. C.F.H. **Carbonate of Barytes**

The only preventative for scum and discoloration on Facing Brick and Terra Cotta, neutralizing the Sulphate of Lime in the Clay and Water.

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Manufacturers of

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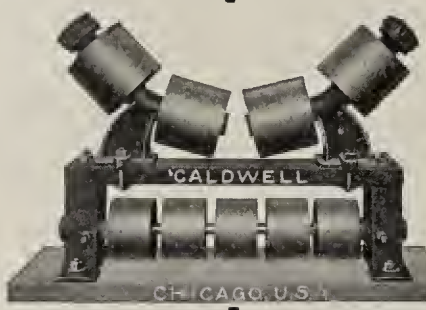

For carrying all kinds of material, gritty and otherwise. Gradual, uniform curve of belt secured without complicated parts.

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We manufacture Complete Handling Equipments.

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Something New in Brick Kilns and Brick Dryers

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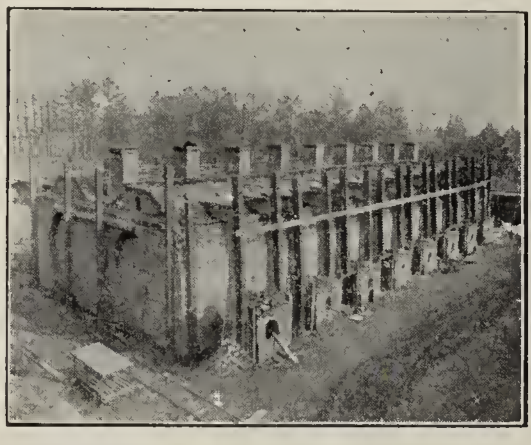
The Dennis Double Chamber Up and Down Draft Brick Kilns and Direct Heat and Hot Air Brick Dryers show many new features that make them superior to all others.

Economical, durable and strong in construction and operation, having many points of advantage that appeal to practical brickmakers.



Double Up and Down Draft Kiln.

THE FULTON BRICK WORKS.
Richmond, Va., Oct. 12, 1906.

F. W. Dennis, 145 Water St., Norfolk, Va.:

Dear Sir—We are now operating one of your Double Chamber Down Draft Kilns recently erected by you. Our last burn in this kiln was practically all hard, only a few soft brick in the gaps, probably not over 1,000 or 2,000 in the whole kiln. The holding capacity of this kiln is from 350,000 to 400 000, depending upon the size of the brick. The bricks were uniformly burned from top to bottom. We expect to erect more of your kilns in the near future. Yours very truly,

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Brick plants installed and put in operation. Write for booklet. Correspondence solicited.

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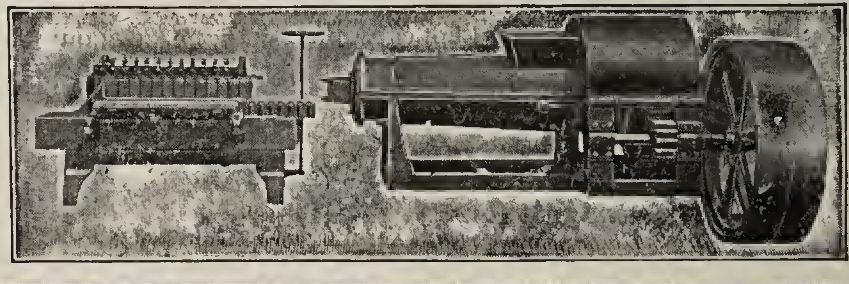

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It has had few rivals and no superiors. Improved from year to year to gain increased

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of finished product, until it has reached the highest state of the Mechanical Arts in Brickmaking.

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Testing and Controlling Apparatus for Clayworkers.

Draft Gauges, Pyrometers, Cones. Watersmoking and Dryer Thermometers, Test Kilns, Electric Furnaces, Experimental Ball Mills, Automatic Brick Counters, Watchmen's Clocks and other apparatus. All designed to keep a record of your business. Prices on application.

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CLAY WASHING
POTTERY
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MACHINERY
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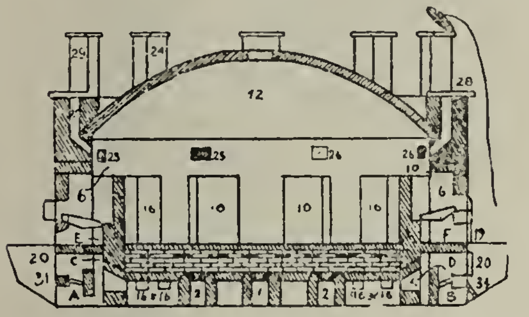

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THE secret of **successful burning** of any clay product lies in the **right application of heat.** To apply heat **where it is needed** it is obvious that **draft control is necessary. Positive draft control is provided by our**

IMPROVED FLUE SYSTEM

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Our kilns are profit makers, burning the brick with the **minimum fuel, shortest time; all the same color and all hard.**

We welcome correspondence from those who intend building new kilns, and from those having old kilns that are not giving satisfaction. Address

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Why not locate a drain tile factory at one of the points, especially in Iowa, where the demand for tile far exceeds the supply, and the clays and shale are of satisfactory quality. At some of these places coal is now mined in the vicinity. There are numerous other excellent locations along the

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Send for a copy of handbook "Opportunities" and other Rock Island-Frisco literature.

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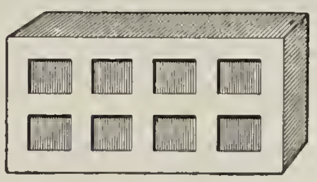
Special Auger Press for shingle tiles' with table automatically cutting and punching nail-holes.

Special stiff mud machinery for smaller capacity and horse driving.



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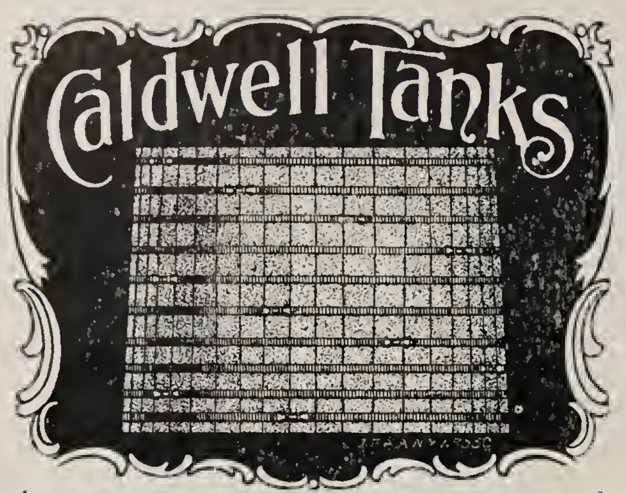

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Neither scorching sun nor chilling frost have any effect upon

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The seasoned "everlasting" cypress of the Louisiana swamps shrinks or swells but little, and our perfect and powerful hooping is the safest kind of insurance against leaking or bursting.

Safety and durability are manifest in every line of the Caldwell tank, and experienced every moment of its lifelong service. These tanks are found in every part of the country, in every climate, giving equally satisfactory service.

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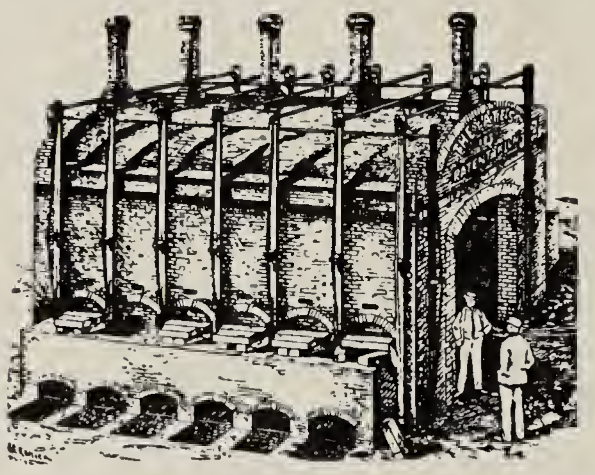

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This kiln will give satisfaction. Constructed to burn without smoke and give an even distribution of heat, producing uniform burns.

Hot air dryer. Continuous and muffle kiln.

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Send for full descriptive circular.

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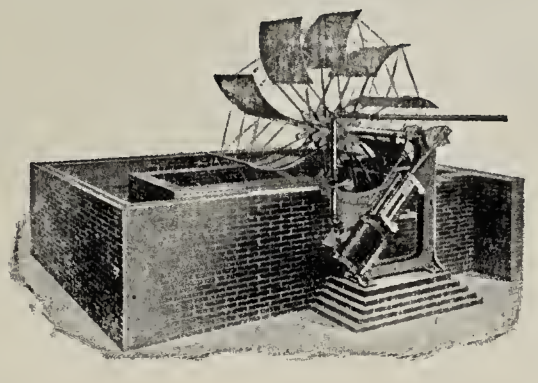

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Cheap and substantial construction. Original Flexible Braces. Air Cooled Ring Oiler Boxes. Moderate Speed. Brick fan house, most durable of all construction. An efficient Cooler made integral with the machine. Lower price owing to cheaper and better mode of construction. Extensively used.

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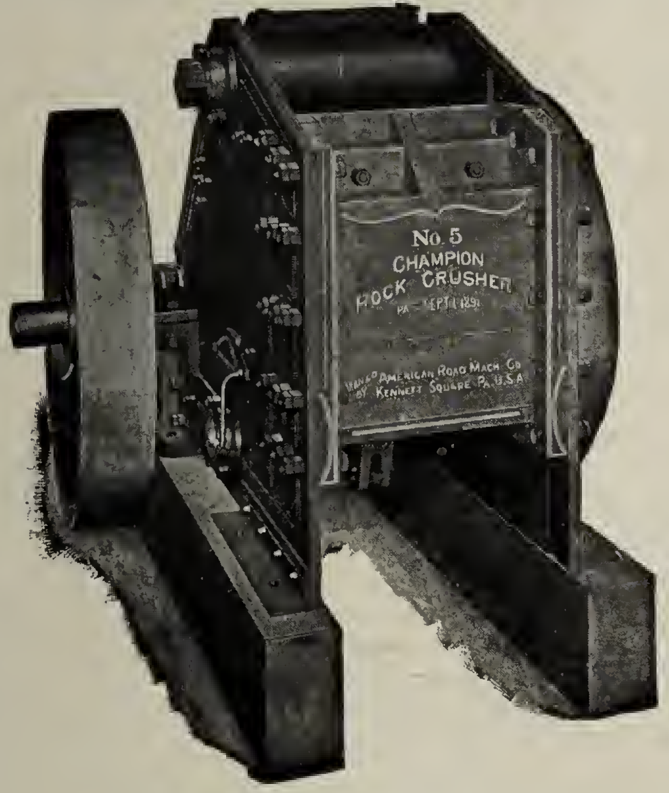
Manufacturers of Hoisting and Hauling Engines, Ventilating Fans for Mines, Waste Heat Fans for Clay Plants, Roofing Tile Presses, etc.



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It Looks Good

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It Looks Better

crushing shale, fire clay, rock and other hard material.

THE CHAMPION CRUSHER

is expensive, ***to do without,*** because it saves you money.

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Special attention paid to dry clay press processes and down-draft kilns.

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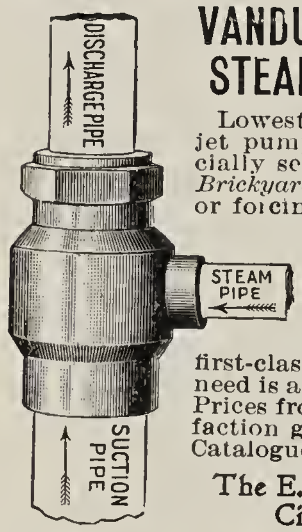

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$2.00 THE CLAY-WORKER ONE YEAR, (IN ADVANCE) **$2.00**

BARRON DRYER CO.,

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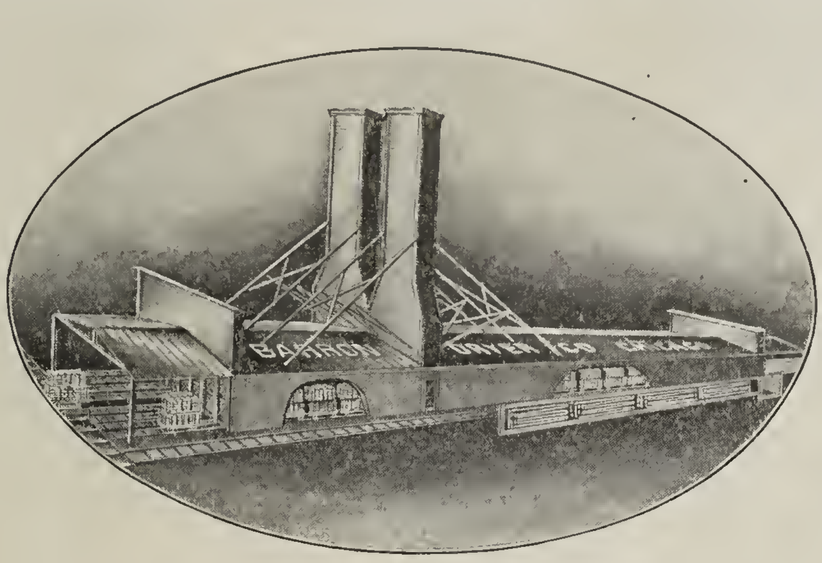

Comparison with all other systems proves these Dryers beyond all competition, for economy and perfect work drying strong or tender clay products.

For information write

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The book will tell you something about it and a trip of inspection is cheaply made. Are you interested?

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Very low one-way and round-trip rates on first and third Tuesdays monthly. Write me to-day for full information.

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(Address me at city nearest you.)

The Multiple Down=Draft Kiln.

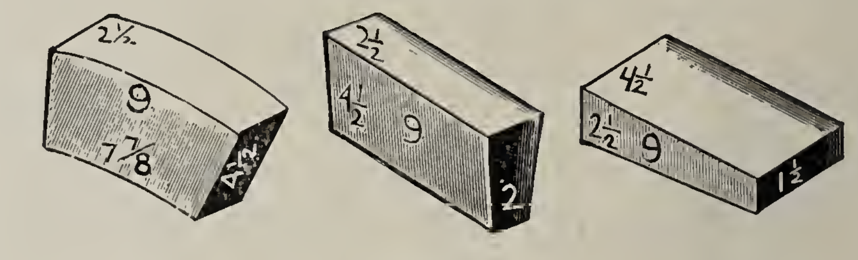
AN IMPROVEMENT ON THE DOWN-DRAFT as well as the old-style continuous. A battery of about eight ordinary size round down-draft kilns, which are connected by a scientific arrangement of flues so that the draft and combustion draws from kiln to kiln. If the kiln is under full fire, the combustion draws into the next kiln for steaming and heating. When kiln under full fire is closed, the next kiln is ready for full fire. The heat from the cooling kilns is utilized for combustion draft of the kiln under fire. The withdrawing heat from the cooling kiln is governed by a damper as much as the clay ware will stand without checking, or the heat may be left for some time before withdrawing. A battery of eight kilns is best so that setting in the green ware, steaming, heating, full fire cooling, and taking the ware out of the kilns, can be continued indefinitely, insuring a steady operation.

For clay or shale of a very rich nature the square kilns are better adapted to a battery of eight kilns, four side by side, about 16 to 18 feet wide and 20 to 30 feet long, leaving room enough between ends for excess, especially if clay ware is undergoing a very high vitrification and annealing. The heat of the cooling kiln is drawn by two flues on each side of the crown without any inlet of cold air, then utilized on other kilns of green ware. The furnaces to my kilns are so constructed as to form a double hot air twin draft coking table. The time to burn one of my kilns is about three days; some clay may take a little longer, others will take less. I have burned a kiln in 60 hours settled 10 inches in a kiln set 32 brick high, with a stack 105 feet high.

Saving time in burning means saving money; saving fuel and saving labor—there is less shoveling to do. KAUL KILNS are for high grade clay ware, for they burn as well as any down draft kiln, and better than the old continuous or Dutch kilns. They are easy to operate for anyone who understands burning. Old kilns, if not too far apart, can be altered to this process. The kiln has been in operation for four years. I will rebuild kilns, or construct new ones, and guarantee results. For information write to

C. F. KAUL,

[Kiln Patented March 23, 1904.] **Madison, Neb.**



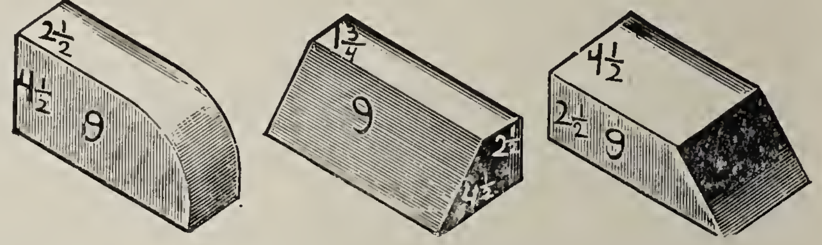
The Federal Clay Product Co.

Mineral City, Ohio.

Fire Brick

for all purposes.

Prices will be named or Catalog mailed on request.



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A Testimonial Letter From
One of Our Customers.

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Dear Sir—After using your system of burning clay wares for two years it is a satisfaction to be able to say that we are pleased with it. Under proper management it will undoubtedly greatly reduce the fuel bills.

Very truly,
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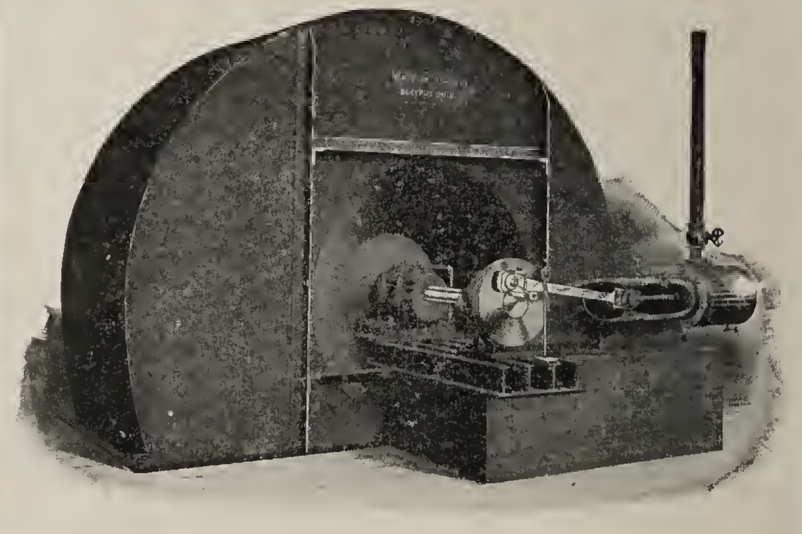
SAVE MONEY

BY SAVING HEAT.

Make more brick and save time of burning. Make better colored brick and save coal.

Plans and estimates for the asking.

Write for Catalogue No. 56F.



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for handling CLAY, SAND, LIME, SHALE, etc., mean ECONOMY—not only in the assured saving of time and labor, but also in the durable construction which results in long service and small repair bills. Write for Book.

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DUMP CARS

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These cars are built in all capacities up to 40 cu. ft., and in gages up to 30 inches. Being constructed entirely of steel they are exceedingly strong and durable. We carry a large stock of these cars at Youngstown, Ohio, and Brooklyn, N. Y., and can fil orders promptly for Rails and their accessories, Steel Ties, Portable Track, Switches, Frogs, Turntables, Steel and Wooden Cars of all gages, sizes and capacities.

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We Are PRACTICAL BRICKMAKERS.

We install Dryers that **DRY BRICKS** either open air or artificial.

We manufacture Disintegrators and Automatic Brick, Tile and Hollow Block Cutting Tables. Absolutely no stop for broken wires. Write for our catalogue.

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—MANUFACTURED BY—

A. M. & W. H. WILES CO.,

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These Molding Machines have been in constant use for over 40 years, and are the original of all machines now made that use a Pug Mill and Sqaure Press, and are the best and most economical machines now in use.

Being established here in 1845, and having made a specialty of the manufacture of all articles used in Brickmaking since that year, and constantly making improvements, we are now enabled to offer parties the best and cheapest now in use.

We have fitted up many of the largest Brick Yards in the United States, and are prepared to furnish everything used in the manufacture of Brick in any part of the country. Correspondence solicited.

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An illustrated hand-book for ready reference, giving detailed information on how to start a yard, and a full description of the process of manufacture of brick, from handling the clay from bank to machine to the finished product, including instructions as to erecting dryer, kilns, etc.

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We have been making about HALF THE CLAY WORKING MACHINERY USED IN THE COUNTRY and we are preparing to supply a goodly portion of the other half.

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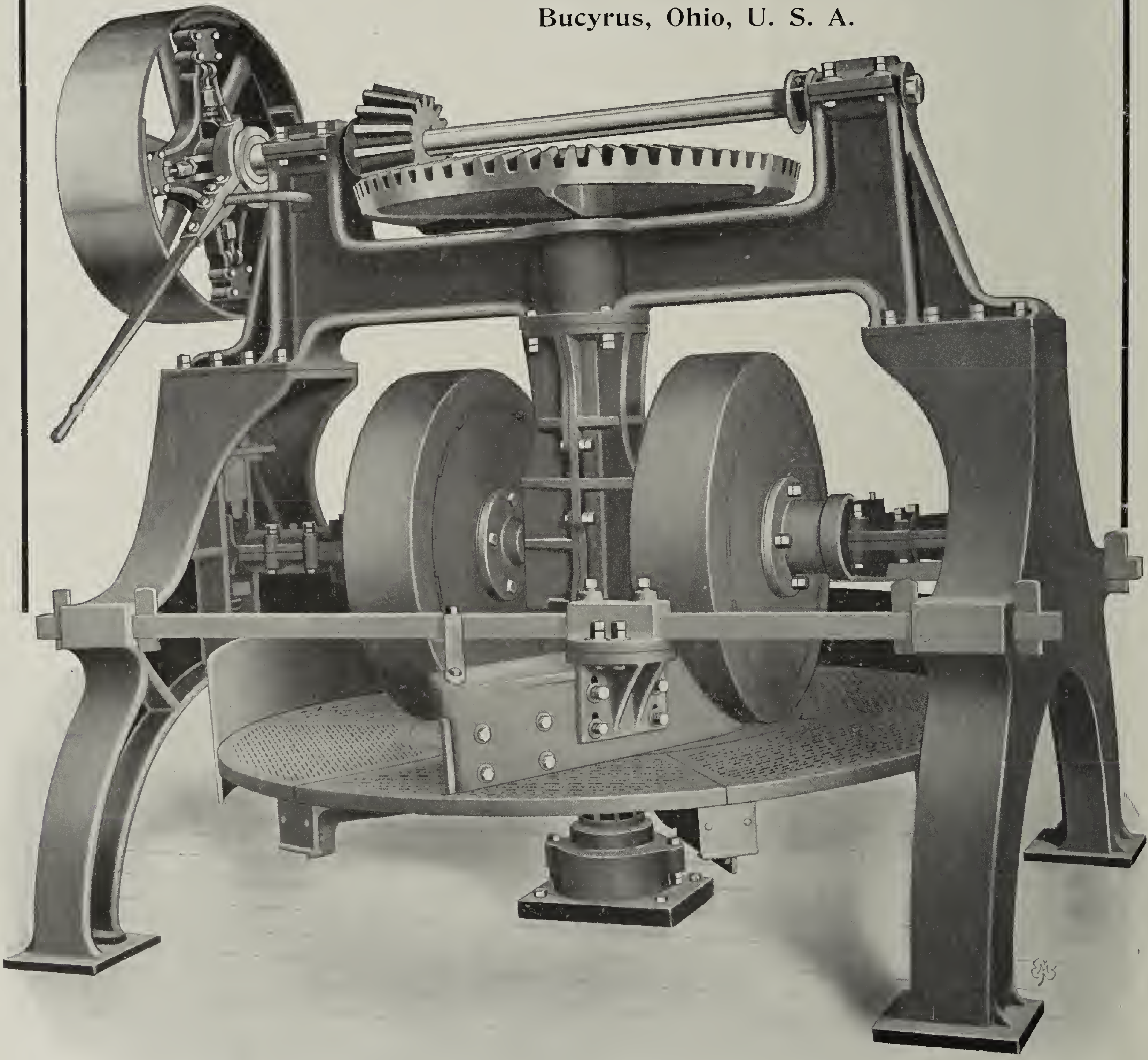

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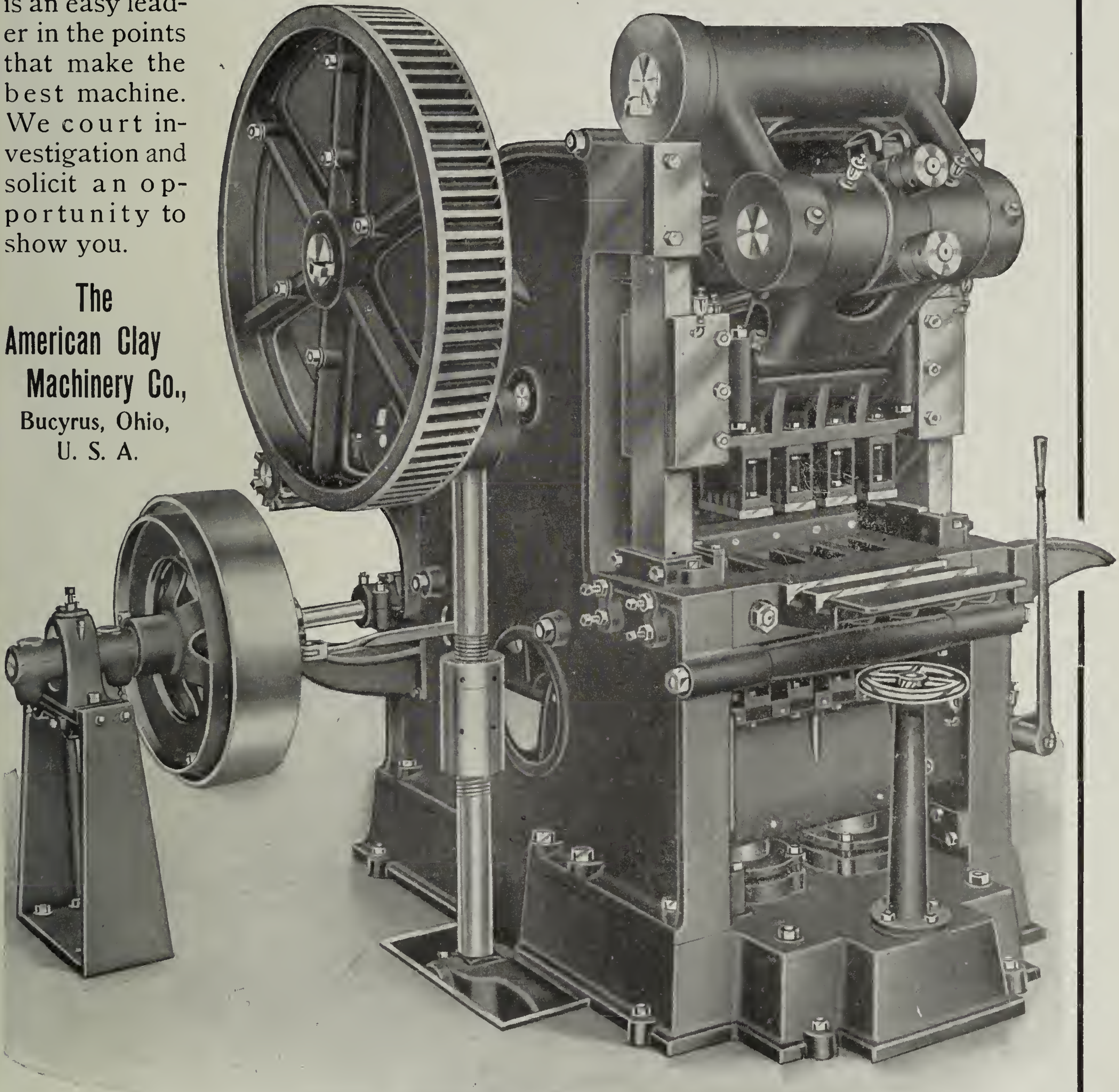

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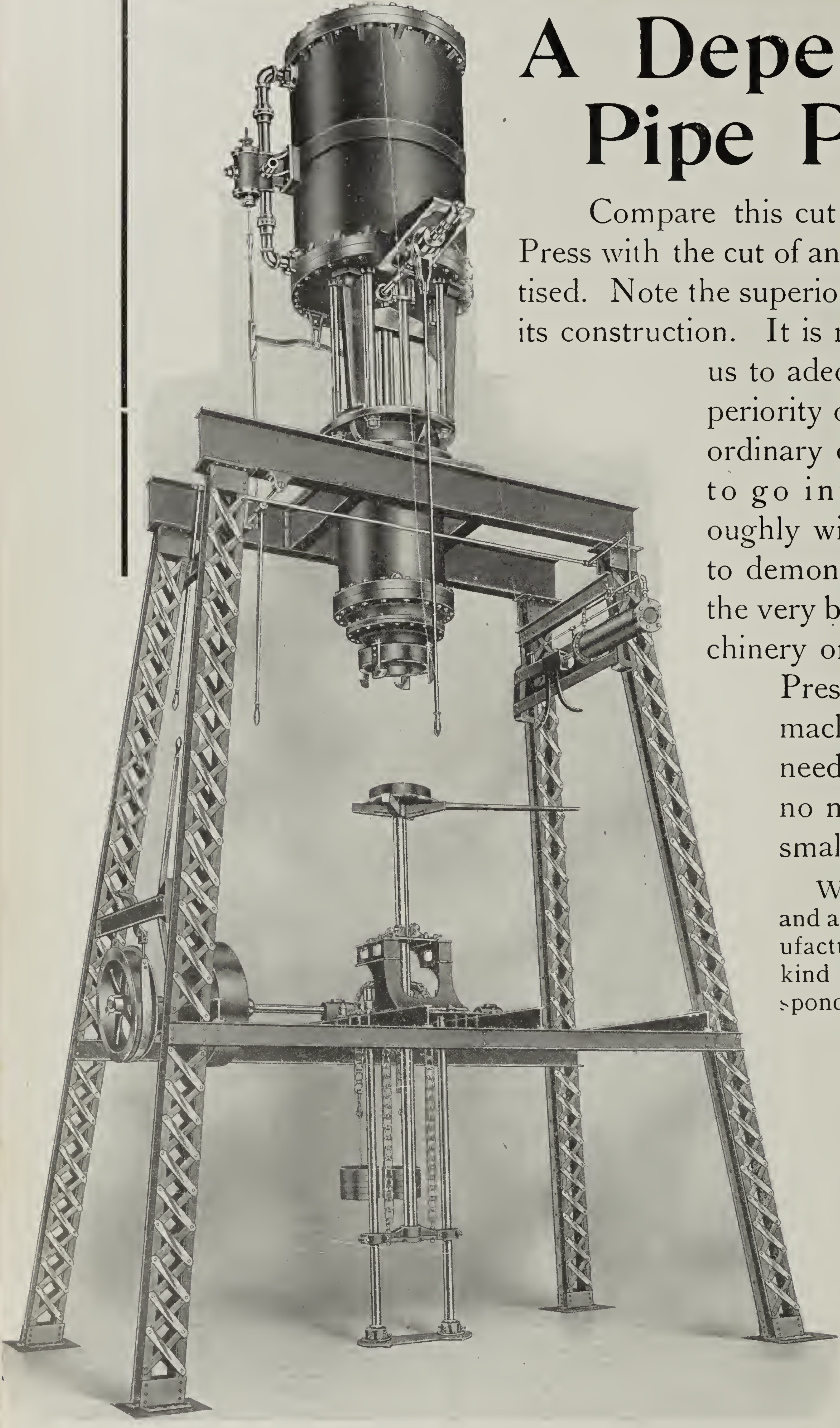

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POCKET KNIVES
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NINE TOOLS IN ONE. WARRANTED.

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Dear Sir—We are using three kilns on the yard now, two of them with your patent bottom. The two parent kilns are doing good work; just finished firing one tonight. We are getting good burns; all tile hard clear to the floor.

The following is a list of the amount of tile of different sizes that we get in the 30 ft. kiln, as we are in the habit of setting them:

On floor 3 tier	3 in.	tile of	5,000	each,	15,000
2 "	4 "	"	3,000	"	6,000
1 "	5 "	"	2,040	"	2,040
2 "	10 "	"	550	"	1,100
2 "	12 "	"	415	"	830

Set in kiln ten tiers high.

The 5 ins. are stuffed with 3 ins.
The 10 " " 6 ins. and 4 ins.
The 12 " " 8 ins. 5 ins. and 3 ins.

Thus making a total in kiln as follows:

17,870 3-in. 7,100 4 in. 2,810 5 in. 1,100 6-in.
830 8-in. 1,100 10-in. 830 12-in.

Coal consumed, 16 tons. Time required, 94 to 96 hours from time fires are first lighted until burn is completed. All the tile are hard from top to bottom; no soft ones to set back in next kiln.

I have tried to make the above as clear as possible; should you at any time wish any more information that I can give, write me and I will be glad to assist you in any way possible. Thanking you for your communication and kind regards, I am Yours truly, H. A. YARGER
Manager.

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Morrison's Latest Improved Kilns for Burning Building Brick.

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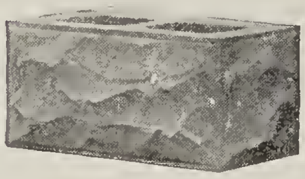

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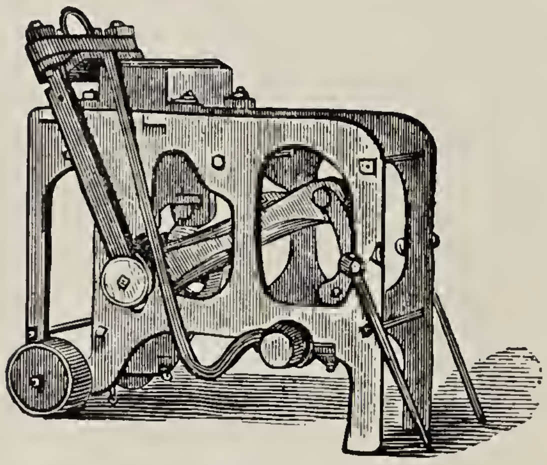

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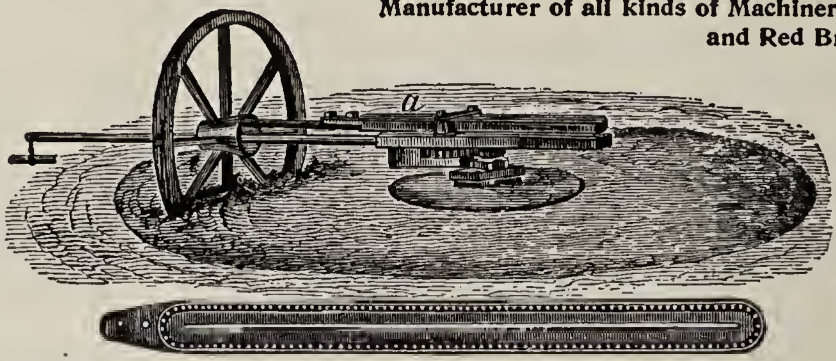

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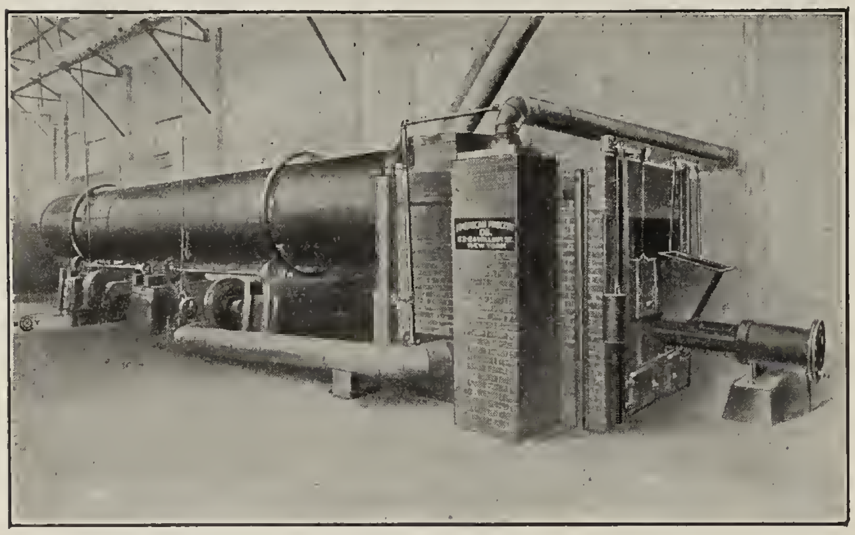

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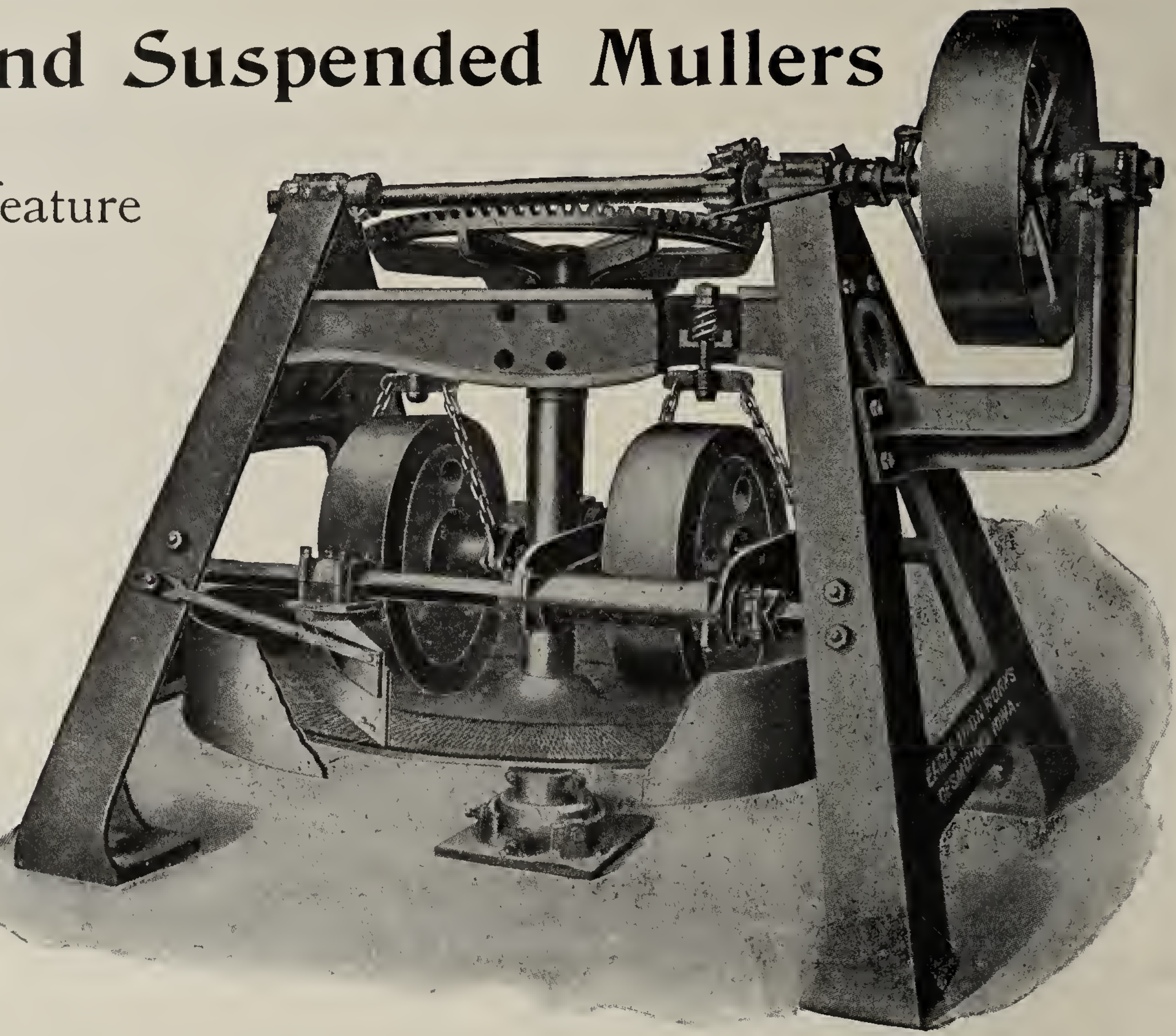

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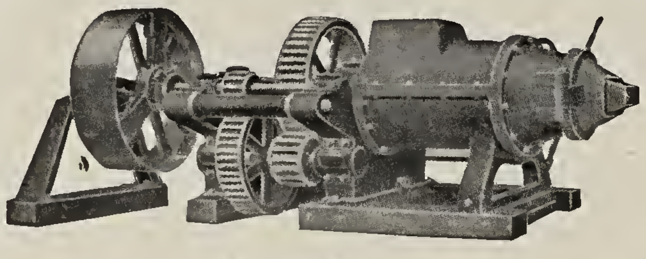

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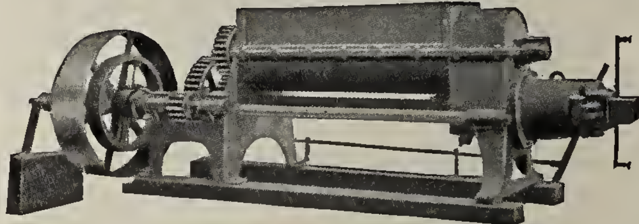

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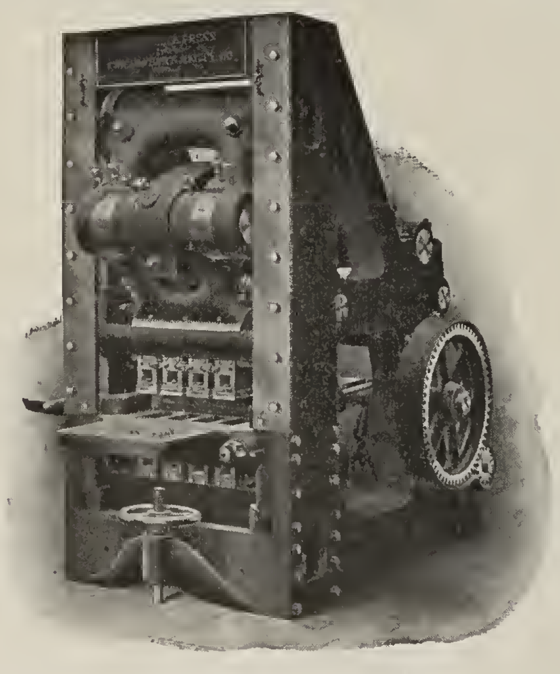

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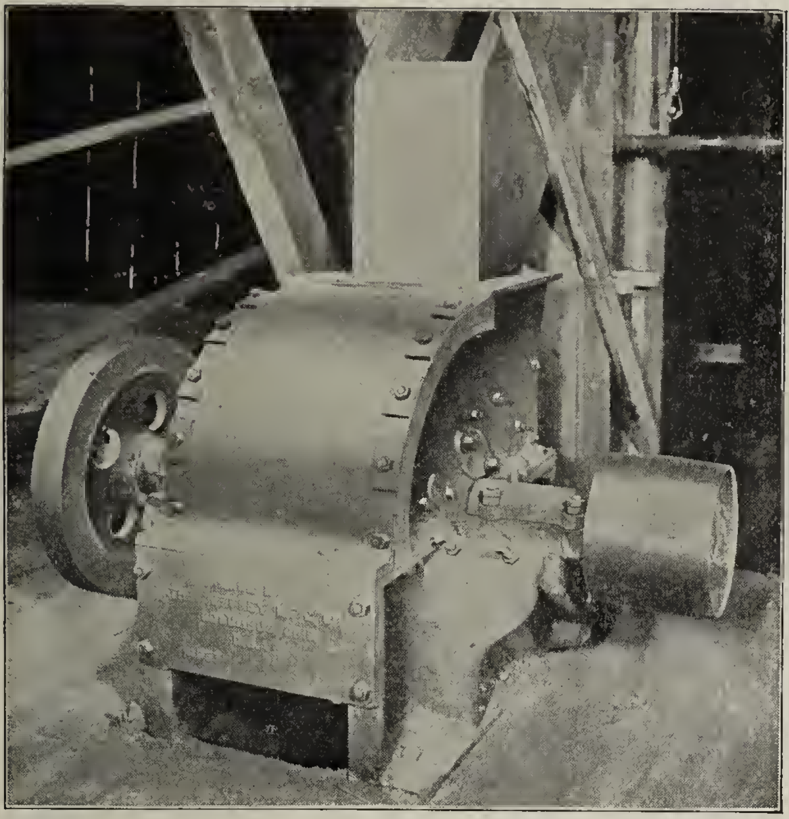

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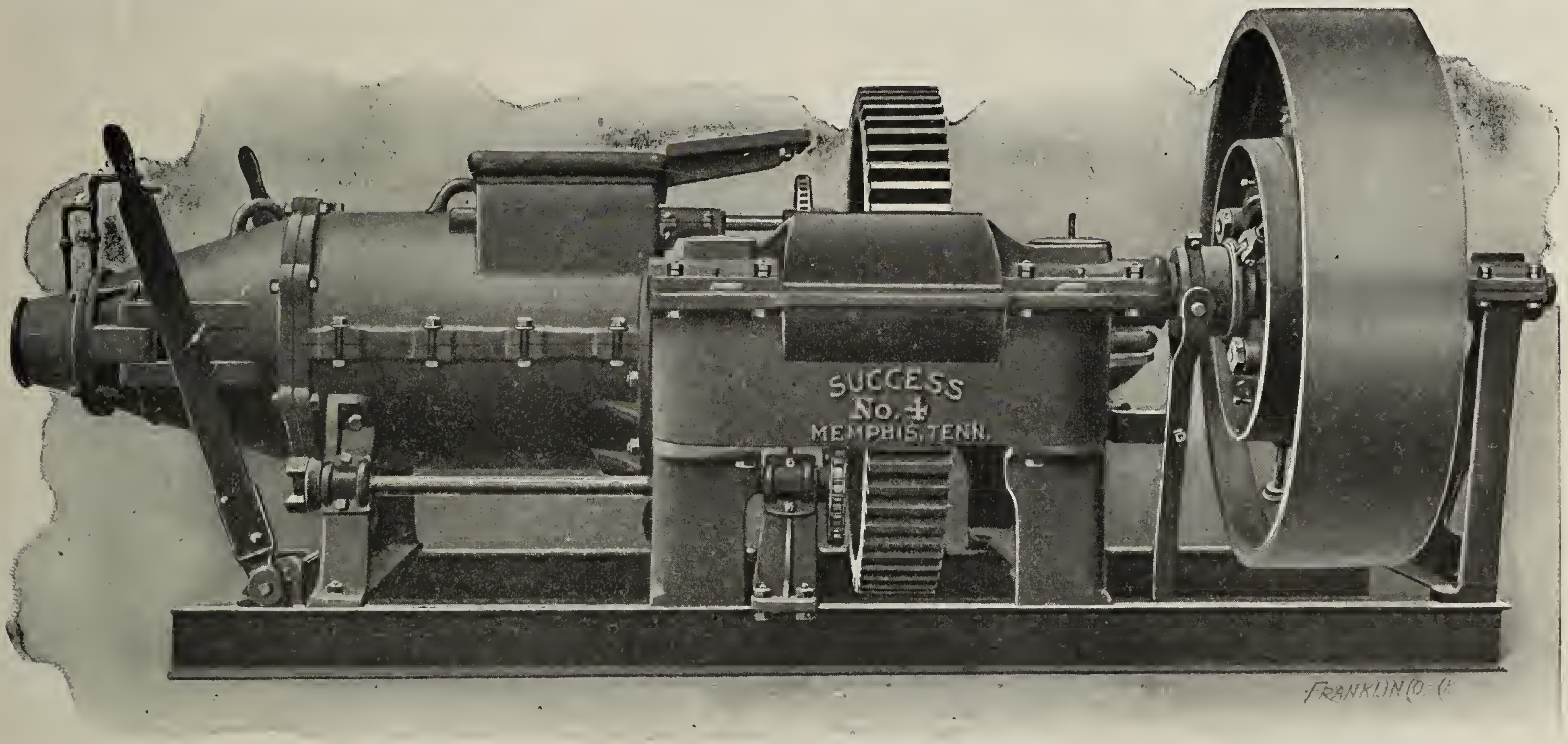

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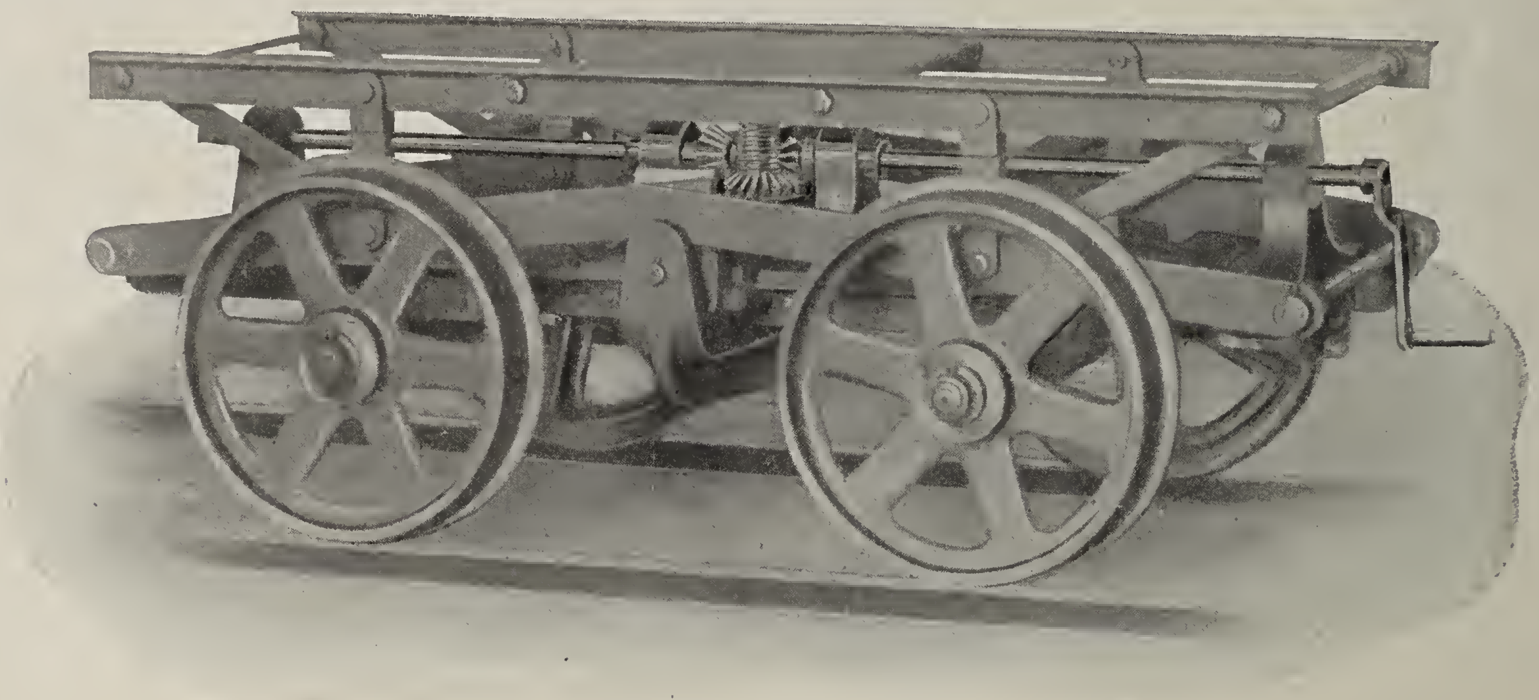
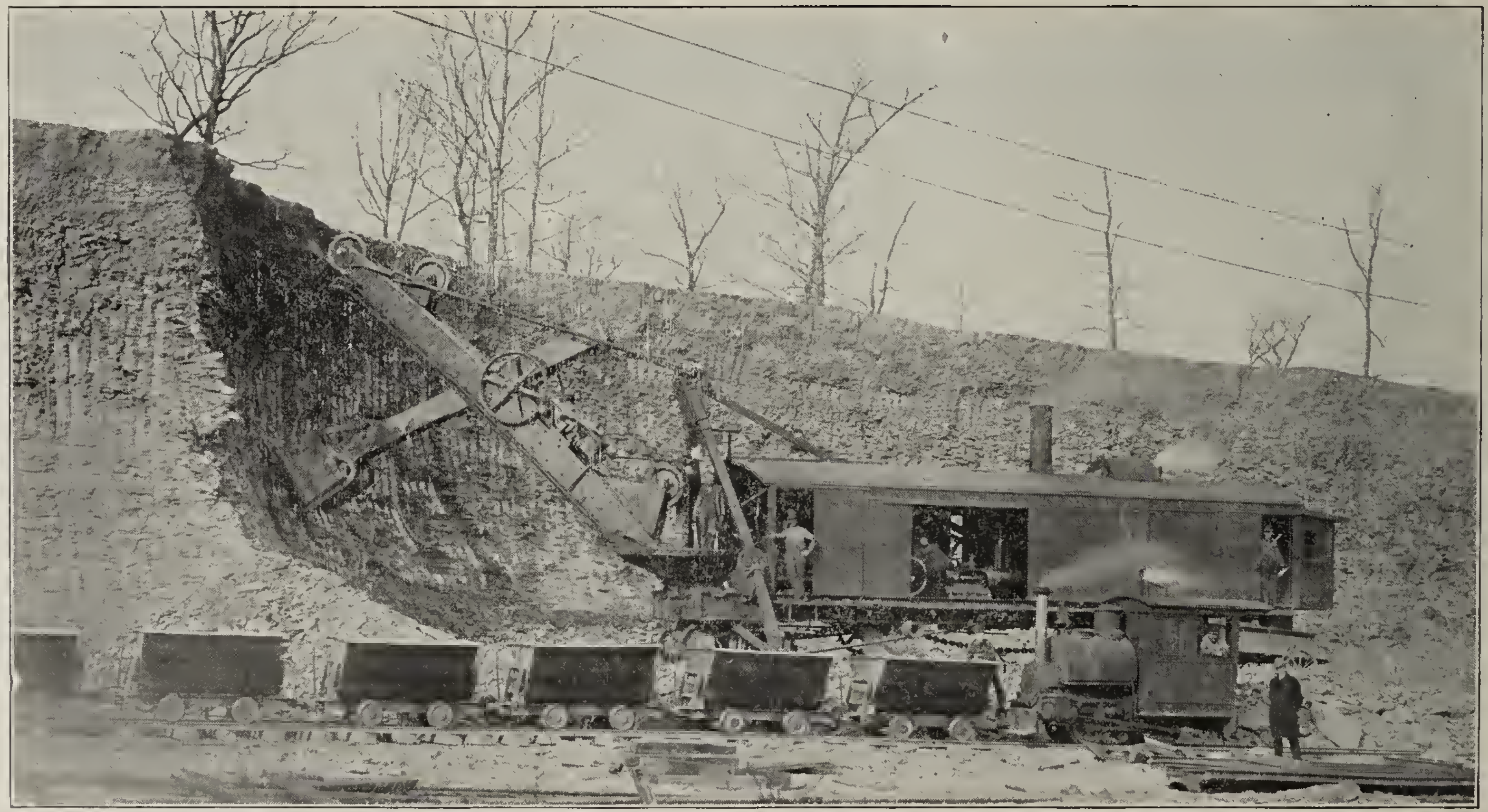


OPEN AIR AND ARTIFICIAL DRYERS—Car and Carless.

The Drymore System, 7th and Chestnut Sts., St. Louis, Mo.

STEAM SHOVELS FOR BRICK YARDS.



We have a large number of Shovels in brickyard service in all parts of the country, and can furnish machines of any dipper capacity desired from ¾ to 5 cubic yards. If interested write for catalog.

The Marion Steam Shovel Co.,

Marion, Ohio.

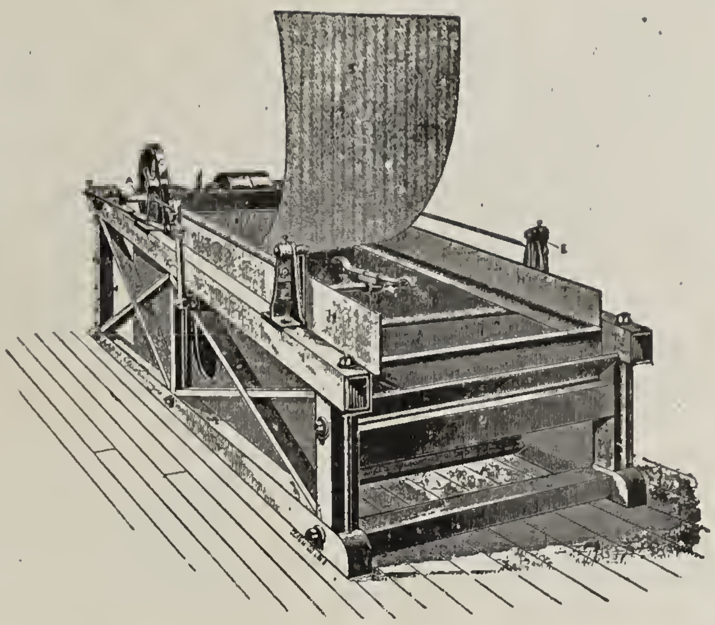
GEORGE W. BARNHART, Western Mgr.
718 Monadnock Bldg., San Francisco, Cal.

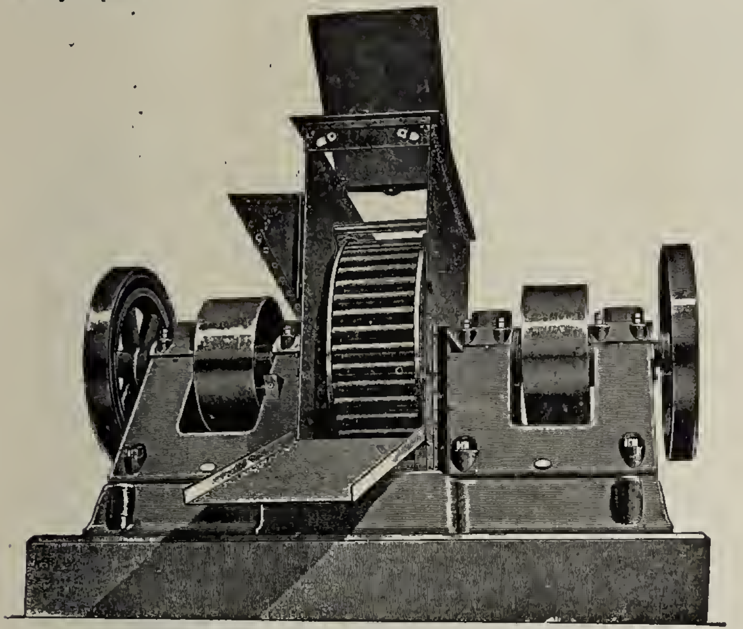
F. H. HOPKINS & CO., Agents,
Montreal, P. Q.

STEDMAN'S AGITATING INCLINE SHAKER SCREEN.

A GOOD Screen for properly screening to any degree of fineness a great variety of materials, and especially clay, is a long felt want. Our Incline Agitating Shaker Screen meets the requirements of the trade in the most successful manner possible.

In this screen we have one of large capacity for small floor space and one that will screen fine without clogging, as the agitating device we have underneath the screen wire prevents any clogging of the screen holes when screening clay or any other material in a dry or semi-dry condition. The screen will run with little power and without any shake or jar to the building, as the moving parts are well balanced by an adjustable counter-weight within the rim of the balance or fly wheel





Stedman's Improved Disintegrator and Pulverizer for Clays.

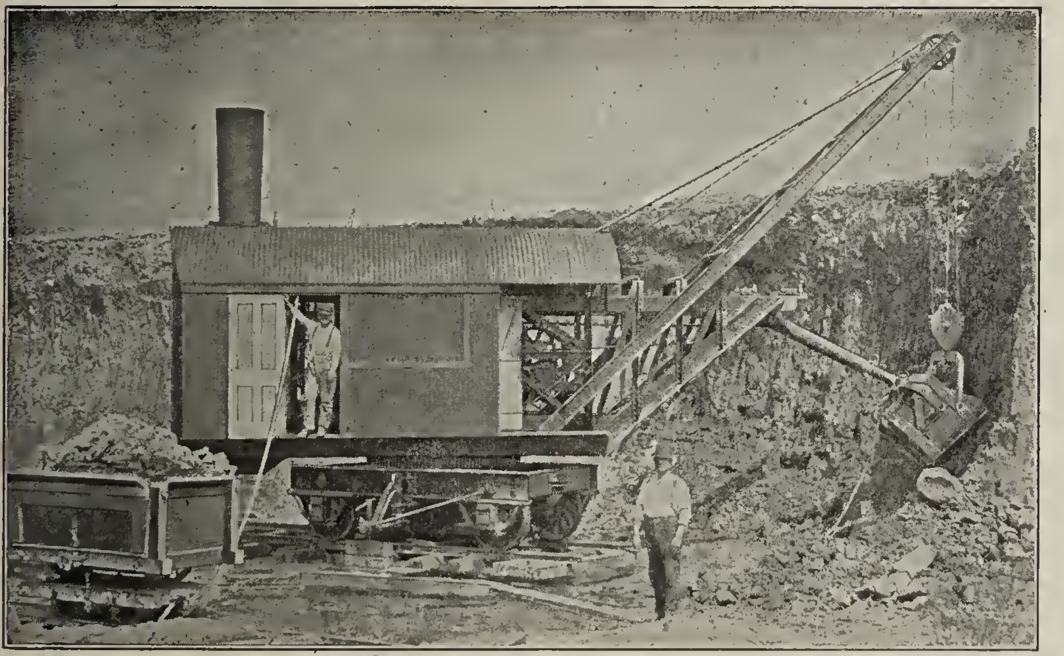
For Thoroughly Pulverizing Clay in a Dry, Semi-Dry or Damp Condition.

Its construction is such that it will not clog in pulverizing damp clay, and the journal bearings are constructed dust proof.

Write for catalogue, giving full description, references and testimonials.

STEDMAN FOUNDRY AND MACHINE WORKS, AURORA, IND.

Handle Your Clay With One Man and The Thew Steam Shovel.



Type No. 3—George Gynn Brickyard, Cleveland, Ohio.

Especially adapted for brickyard requirements. The shovel operates in a complete circle, enabling material to be delivered at side or in rear at will. The Dipper is hung from a horizontally moving carriage and can be adjusted to cut to any desired level.

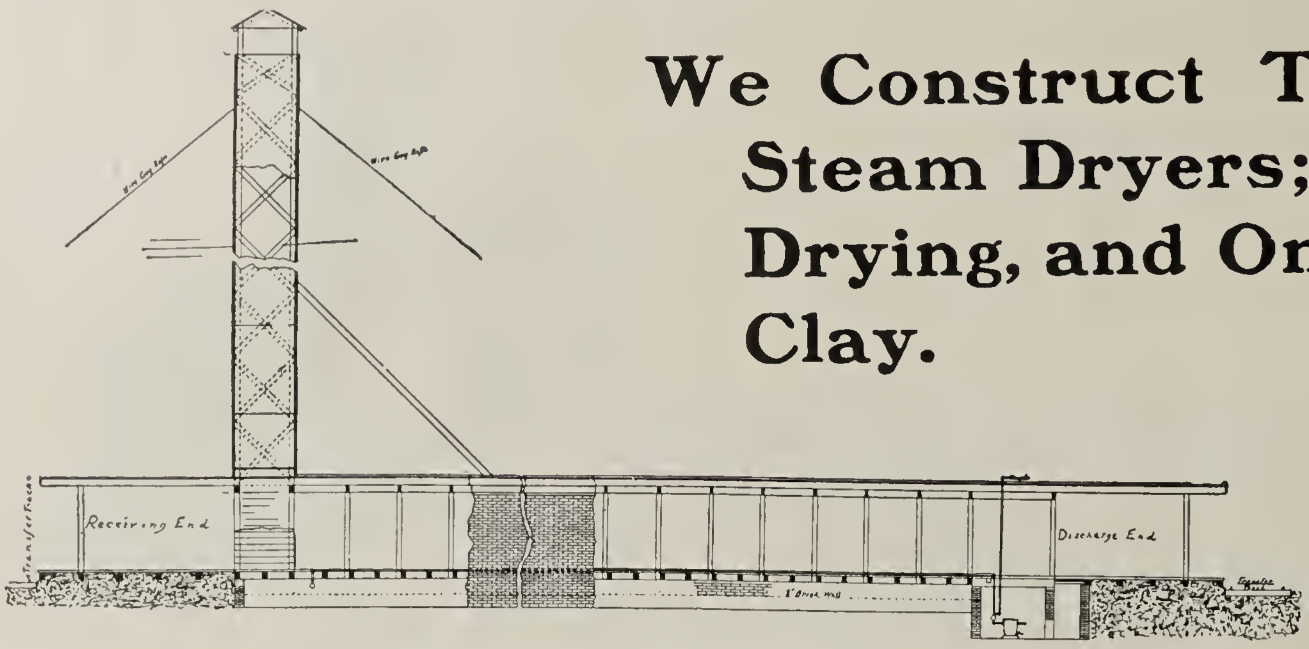
Only One Operator Required.
Wire Cables used instead of Chains.
Strictly First-Class in every Detail.

Made in four sizes.
Mounted on Car Wheels
or Traction Wheels.

Economical for brickyards 30,000 to 40,000 daily capacity. Operated by one man for outputs up to 125,000 brick per day.

WRITE US FOR CATALOGUES OR INFORMATION.

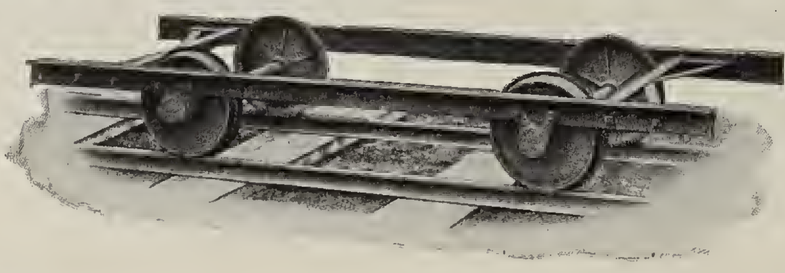
THE THEW AUTOMATIC SHOVEL CO., LORAIN, OHIO.

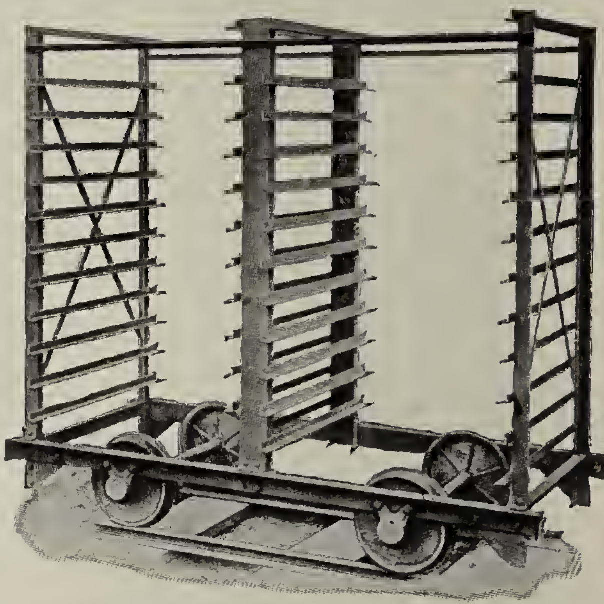


We Construct Two Styles of Steam Dryers; One For Fast Drying, and One For Tender Clay.

Skeleton Cut of Tender Clay Dryer.

WE MANUFACTURE ALL STYLES OF CARS FOR BRICKYARD PURPOSES.



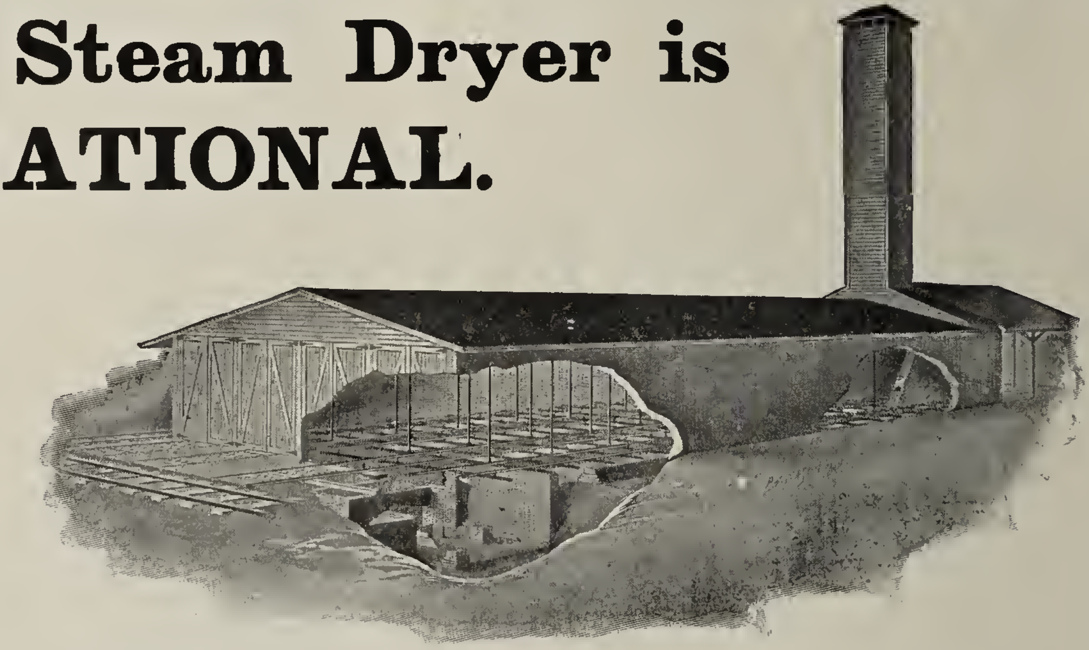


We are in position to make prices that will get your order.

THE HORTON MANUFACTURING CO., Painesville, Ohio.

See Ad on Page 698.

The Exhaust Steam Dryer is THE NATIONAL.



The National Patented

STEEL FOUNDATION and STEEL ROOF SUPPORTS

Eliminate All Woodwork Below the Ceiling Line.

CARROLLTON BRICK CO.

The National Dry Kiln Co.,
Indianapolis, Ind.

Carrollton, Ky.

Gentlemen—In reply to your favor of the 2nd will say our dry kiln which you installed last spring, is giving the utmost satisfaction. We are drying more brick than you guarantee, and can recommend it to anyone as a first-class drier in every respect. Easy to operate and no expensive repairs, and never out of order. Wishing you success, we are,

Yours truly, THE CARROLLTON BRICK CO.

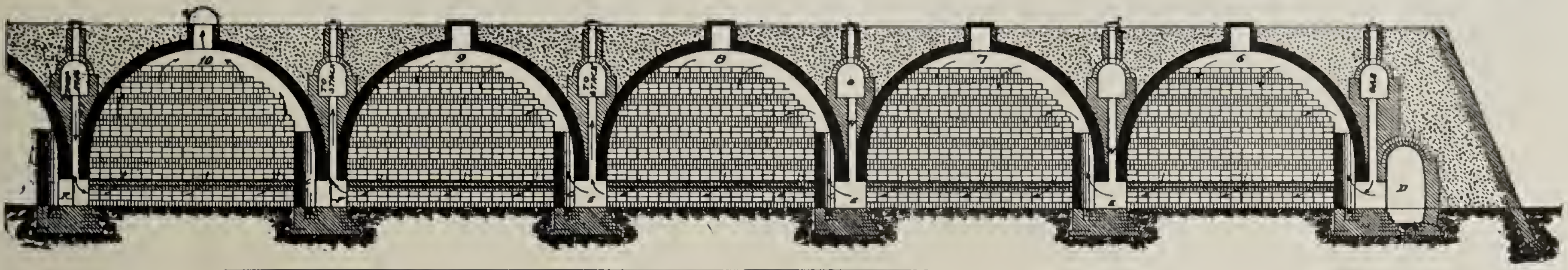
We make all kinds of Cars for carrying Brick, Turntables, etc.

The National Dry Kiln Company,

INDIANAPOLIS, IND.

C. H. BEALE, Manager Southern States, Montgomery, Ala.
TATUM & BOWEN, Pacific Coast Agents, Seattle, Wash.,
Portland, Ore.

THE YOUNGREN CONTINUOUS KILN.



Office of
TIFFANY ENAMELED BRICK COMPANY,
Awarded Grand Prize
Louisiana Purchase Exposition.

Momence, Ill., April 12, 1905.

P. L. Youngren, Esq., Milwaukee, Wis.:

Dear Sir—Replying to your favor of the 10th inst., we take pleasure in testifying to the merits of the "Youngren Continuous Kiln" (12 chambers) which we are now using, and have been using since July 6, 1903. With it we are able to burn our biscuit brick with a large saving of fuel, using one twenty-ton car of coal where we formerly used three for the same quantity of brick.

Our biscuit brick are carried to a temperature higher than the ordinary pressed brick, and there is no trouble either in obtaining any degree of heat required, and it is easy to control and keep even temperature throughout the kiln. Either an oxidizing or reducing fire can be had, and the heat thrown into any part of the kiln desired.

Wishing you continued success, and with kindest regards from all here, we are

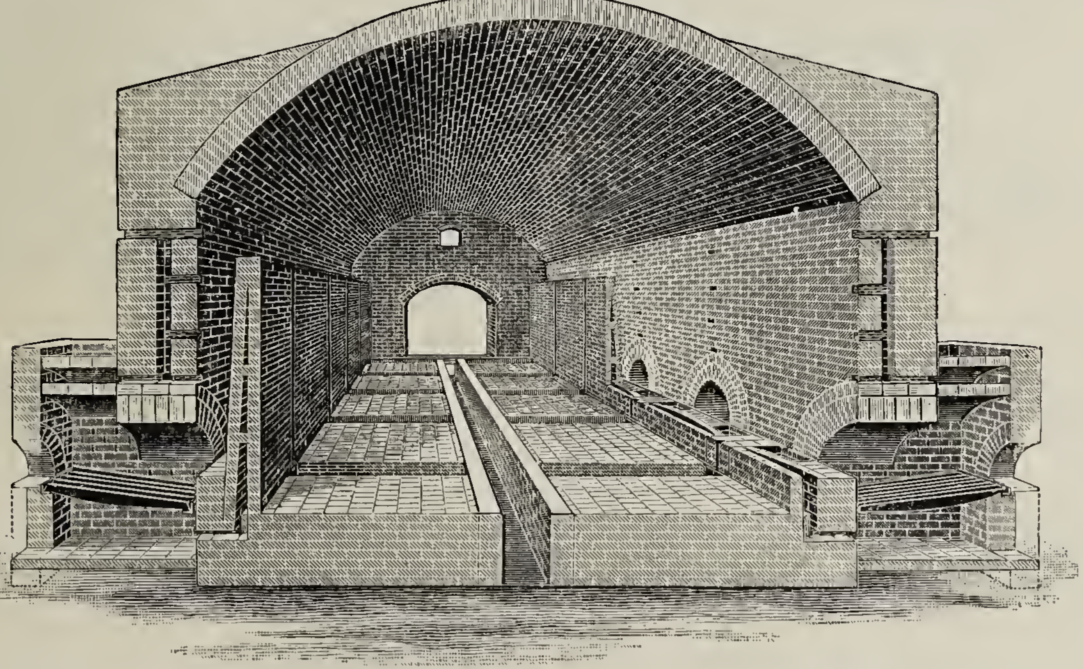
Very truly yours, TIFFANY ENAMELED BRICK CO.
J. Van Inwagen, Jr., Vice-President.

The only continuous kiln adapted to the burning of high grade brick. No coal put on the brick. The coal is converted into gas before entering the kiln, resulting in uniform and clean burns. Absolute control of the heat. No experiment. Write for further information to

P. L. YOUNGREN,
299 25th St. Milwaukee, Wis.

The EUDALY DOWN DRAFT KILNS.

STEAM and AIR BLOWER and HOT AIR DRYING SYSTEM.



These kilns are built round or square and of any size to suit the kind of wares, and daily capacity of the plant. Burns uniform and all hard. Economical in construction and operation.

The Eudaly Combination Furnace burns any kind of fuel. This is the best furnace known for burning wood, coal, slack coal or wood and coal combined.

The Eudaly Adjustable Steam and Air Blower is something new and is especially adapted to the burning of culm or coal dust economically.

The Eudaly System of utilizing the waste heat from cooling kilns is one of the greatest fuel savers known.

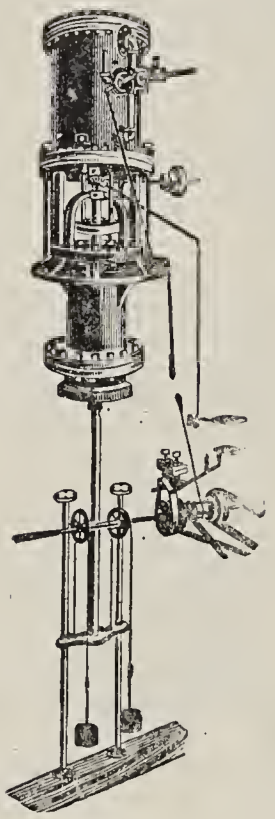
W. A. EUDALY, 509 Johnston Bldg. Cincinnati, Ohio.

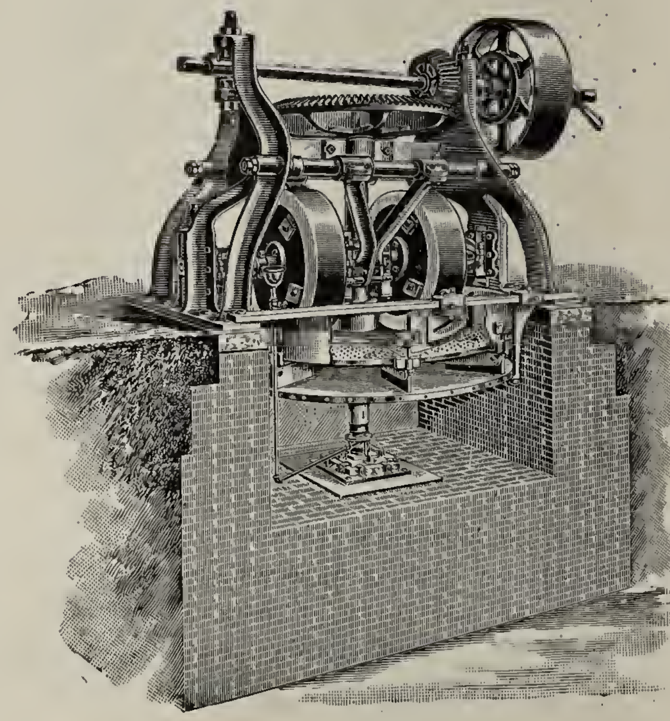
BIGGEST SINGLE ORDER

For Clayworking Machinery EVER PLACED in Uncle Sam's domains, has gone to

THE STEVENSON CO.,

of Wellsville, Ohio.





This mammoth order was placed by

The Robinson Clay Product Co.,

Of Akron, Ohio,

one of the giant sewer pipe corporations of the world, after a keen inspection of a number of plants recently erected by the Stevenson Co., which convinced them beyond a doubt that Stevenson's machinery is the most speedy and perfect in the world, and no progressive company can afford to be without it.

The judgment of such a company is entitled to the greatest weight with other manufacturers, actual or prospective. Here is their order:

THE ROBINSON CLAY PRODUCT CO.
Akron, Ohio.

John J. Starr, Secretary.

October 30th, 1906.

The Stevenson Company, Wellsville Ohio.

Gentlemen—As per your proposition of the 27th, quoting us on sewer pipe machinery, you may enter our order for the following:

4-9 Ft. Improved Iron Frame Dry Pans
10-8 Ft. Improved Iron Frame Wet Pans
1-44 x 60 x 21" Sewer Pipe Press
4-40 x 52 x 20" Sewer Pipe Presses
2 Sets of Socket Dies from 2" up to 24"
7 Clay Carriers and Feeders
Delivery--sixty and ninety days
Terms--as specified in proposition.

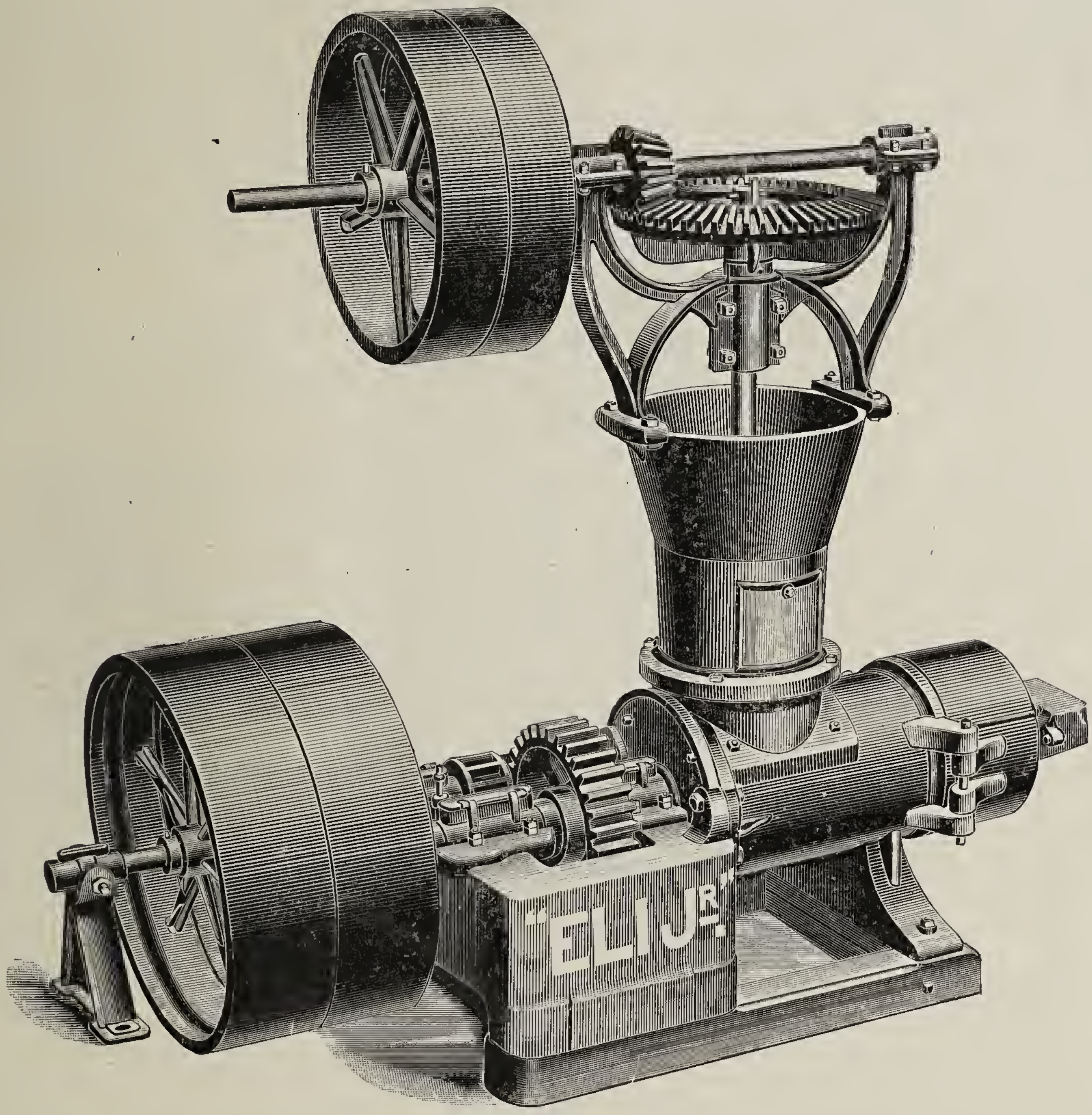
Yours truly,
THE ROBINSON CLAY PRODUCT CO.,
John J. Starr, Sec.

MICHIGAN BRICK AND TILE MACHINE CO.

Morenci, Michigan.

These machines are guaranteed to make brick and tile without LAMINATION.

40 Years' Experience in the Manuafacture of Brick and Tile Machinery.
51 Years in the Manufacture of Brick.



Eli Jr.—Latest Improved Medium Size Machine.

READ WHAT USERS SAY.

Ottawa, Ohio.
Michigan Brick and Tile Machine Co.
Morenci, Mich.

Gentlemen—We have used your Eli machine for two seasons and can say it is a first-class machine in every respect. J. C. Dangler Tile Co.

Alvordton, Ohio.
Michigan Brick and Tile Machine Co.
Morenci, Mich.

Gentlemen—The Eli Jr. Brick and Tile Machine purchased of your concern three years ago has given the best of satisfaction, and we are pleased with it in every way. Respectfully yours,

Alvordten Brick and Tile Co.
Per T. E. Schneider.

DRYING BRICK WITHOUT A DRYER

How many men do you use taking off bricks?
How many dryer and car men?
How many tossers in the kiln?
How much time do you lose switching cars in and out of kilns?
How many times are the machines stopped waiting for cars?
How much is lost because there are no dry bricks ready for kilns?
How many bricks are lost each year in transit through dryer?
How many cars of brick are wrecked each year?
How much does it cost you to keep up the dryer, dryer cars, tracks, etc.?
How much money have you invested in this and what is the depreciation?

HOW MUCH WILL YOU SAVE IF ALL THE BRICKS THE MACHINE CAN MAKE GO INTO THE KILN, WITHOUT CARS, WITHOUT LABOR, WITHOUT DRYERS, WITHOUT TRANSFER CARS, WITHOUT TRACKS, WITHOUT STOPS, WITHOUT DELAYS?

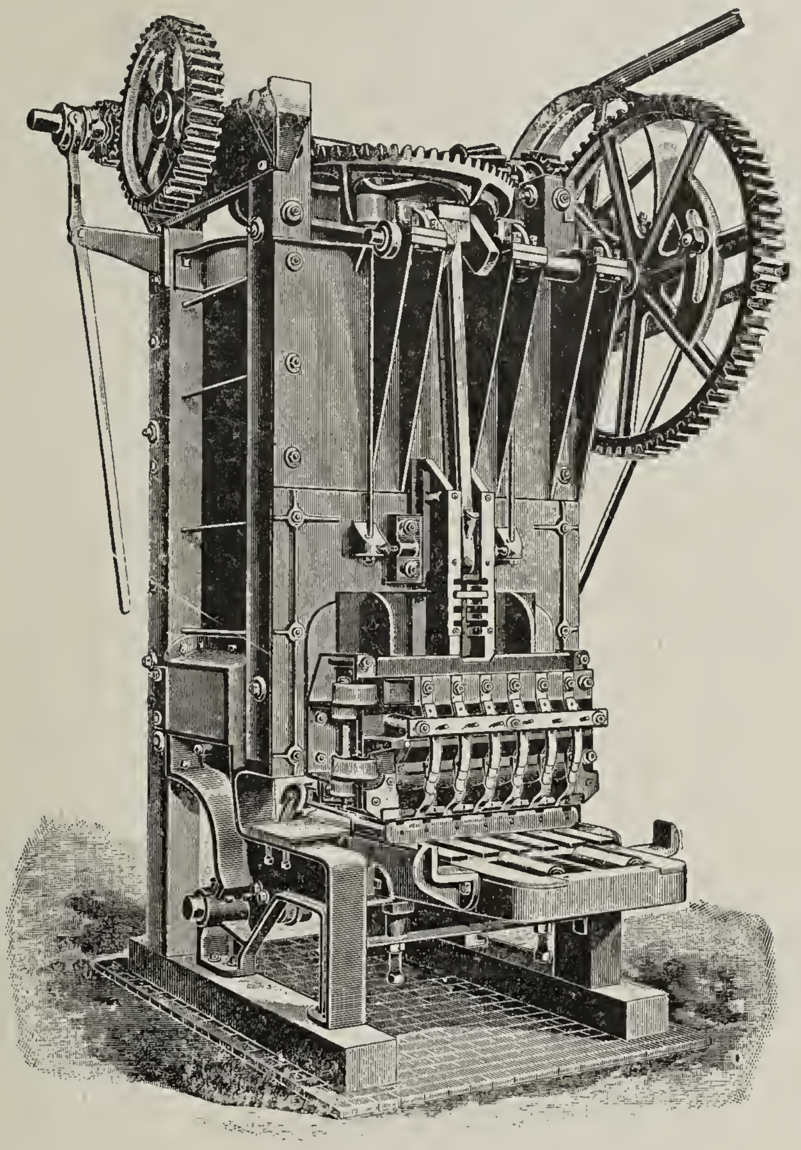
Now is a good time to figure it up, and when you have figured it, let us tell you how to save the total sum and at the same time get better bricks.

The Scott Kiln-Drying Company

1400 Russell Street, Detroit, Mich.

"Endurance the Crowning Quality" of the New Haven Brick Machines.

The "New Vertical" Brick Machine is the Most Substantial Upright Soft Clay Brick Machine in the World. It has vertical pugging chamber and direct vertical press, employing ideas developed by years of experience. It will outwear and outlast the lighter and cheaper built machines, and at the same time do better work.



The "New Haven" Vertical Brick Machine.

The weight of the New Vertical Machine is 12,300 pounds, and its capacity is only limited to the facilities for handling the brick as they come from the machine. It is adapted to work any clay and is suitable for any yard, either large or small, that uses steam for motive power. The brick made with it are solid and square, having smooth surfaces and sharp corners. For Quality and Quantity of production, we challenge comparison with any machine built.

The EASTERN MACHINERY CO.,

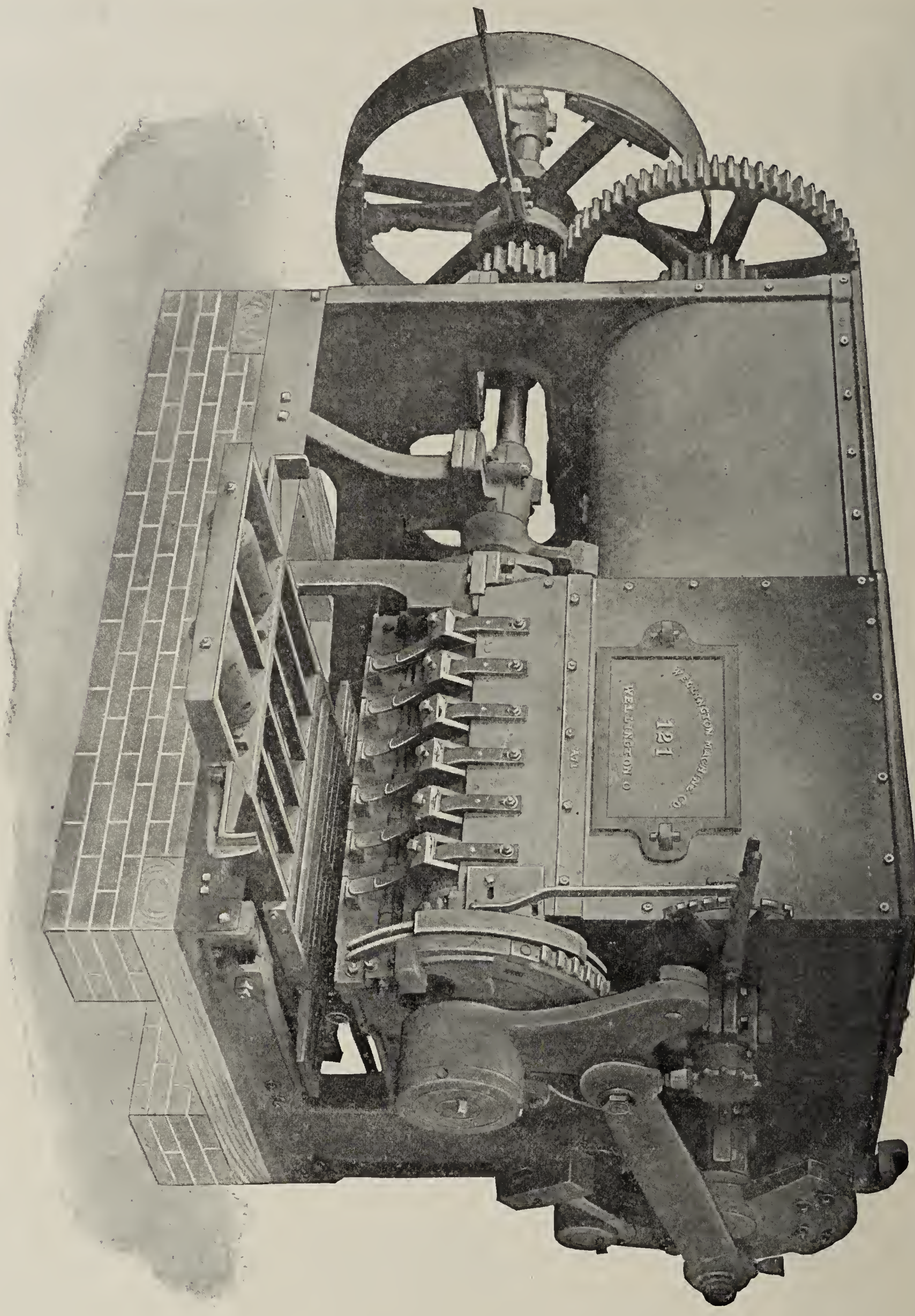
NEW HAVEN, CONN.

The "Big No. 6" "Monarch" Brick Machine.

OVER
235
"Monarch"
Brick
Machines
in use

OVER
565
"Quaker"
Machines
in use.

WRITE
to us
regarding
Disintegrators.
Pug Mills,
Mold
Sanders,
Sand Dryers,
Smooth-roll
Crushers,
Molds,
Barrows,
Trucks,
Winding
Drums,
Dump Carts,
Elevators,
Dump Tables
and all
kinds of
Kiln
Castings.

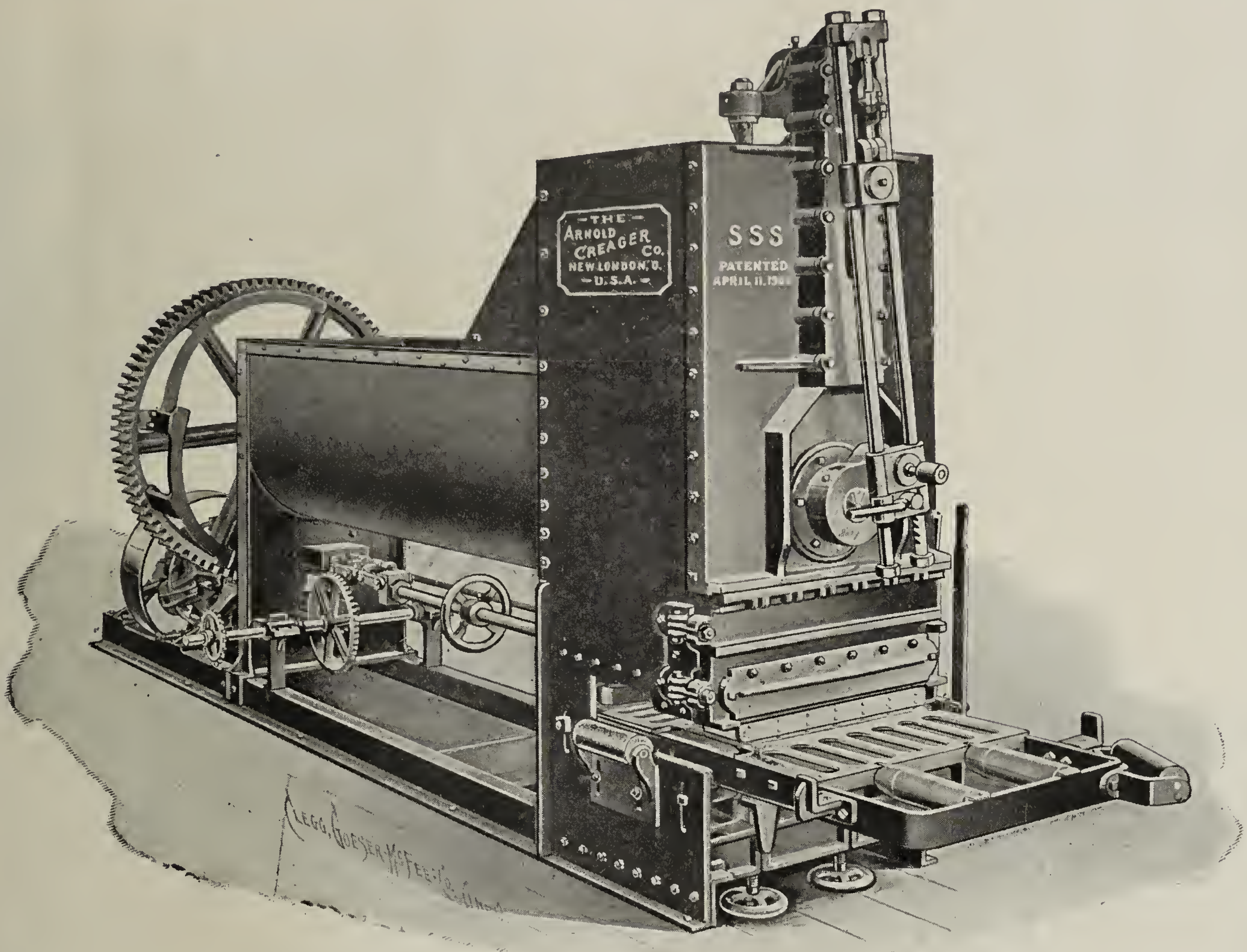


REMEMBER:
You are losing money wheeling brick unless you have our
ROLLER-BEARING BARROWS.

The Wellington Machine Co.,
WELLINGTON,
OHIO.

Send for Catalogue.

HONESTY IS THE BEST POLICY.



S-S-S.

Every Brickmaker should insure himself against loss through poor machinery by taking out a policy NOW with the Arnold-Creager Company, and adopting one of their S-S-S all-iron-and-steel Brick machines. A perfect combination of Simplicity and Strength. Few parts, and all Automatic. Inside Press, exerting tremendous pressure, easily regulated. Twelve feet of tempering capacity, and can easily run 16 moulds per minute. Solid construction enables the working of very stiff clay, making the ideal brick. Front of Press fitted with stone doors when desired. A strictly first-class machine at a small price.

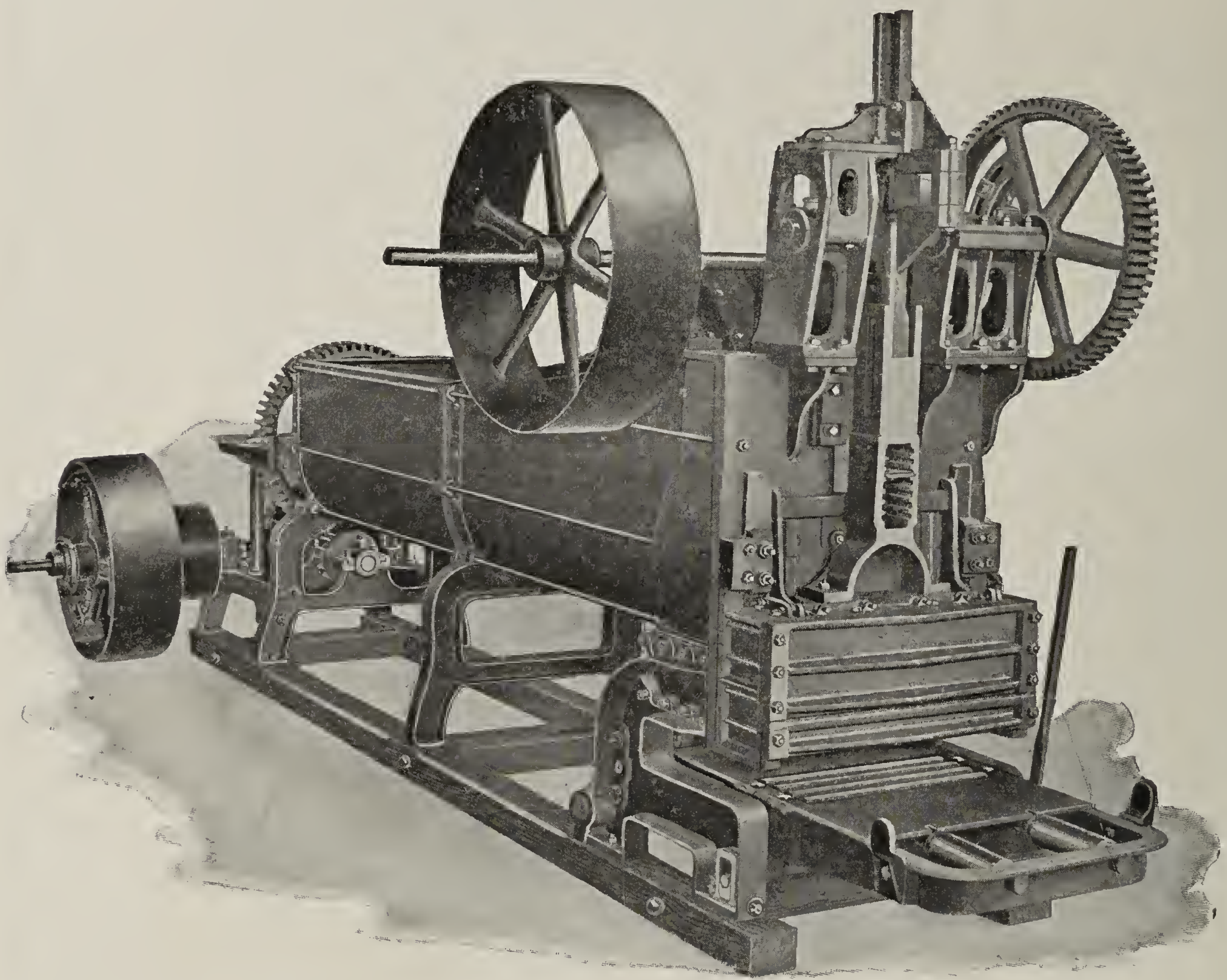
For complete catalog giving details of this, and other high grade machinery and the "1906—Grand-Automatic" address

The Arnold-Creager Company, Inc.,

NEW LONDON, OHIO. CINCINNATI, OHIO.
CABLE "AUTOMATIC".

The Potts Horizontal Brick Machine.

The equipment of Sand Mould Brick Plants is our specialty. We manufacture the complete plant—Brick Machine, Disintegrators, Mould Sanders, Granulators, Winding Drums, Clay Cars and Steam Dryer. This makes a one-man proposition, and we are responsible for the satisfactory working of the entire plant from The Clay Bank to the Kiln.



The only Sand Mould Brick Machine made in which Cast Steel Gears are used exclusively. They can not be broken.

Steel shaft large in diameter.

ALL IRON AND STEEL.

Heavy, Strong and Durable. Large tempering capacity, insuring brick that will have clean, sharp corners and smooth surfaces.

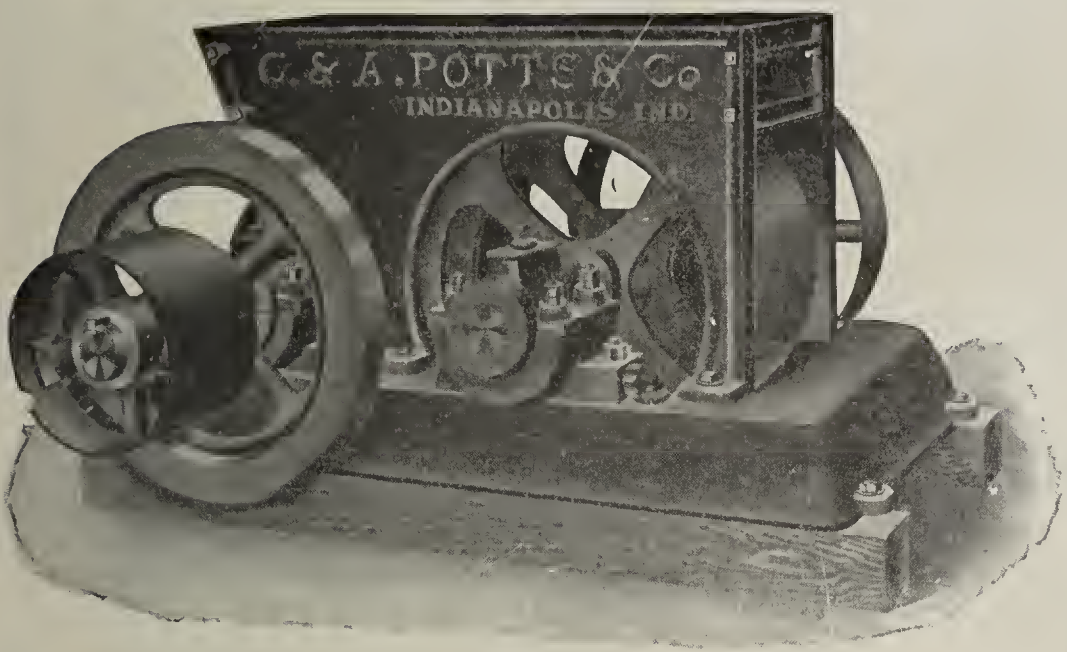
Great strength enables working the clay stiff and filling a six brick mould perfectly. Every claim made fully guaranteed.

C. & A. POTTS & CO.,
Indianapolis, Ind.

Mention the Clay-Worker.

CLAY DISINTEGRATORS

Either Single or Compound.



Having chilled rolls made from a special grade of iron.

Steel shafts. Ring oiling bearing, long and large in diameter. Adjustable steel bars.

The Potts Disintegrator is the standard machine. All others are imitations. Grinds the clay and separates the stone. No choking or clogging from wet, sticky or hard dry lumps.

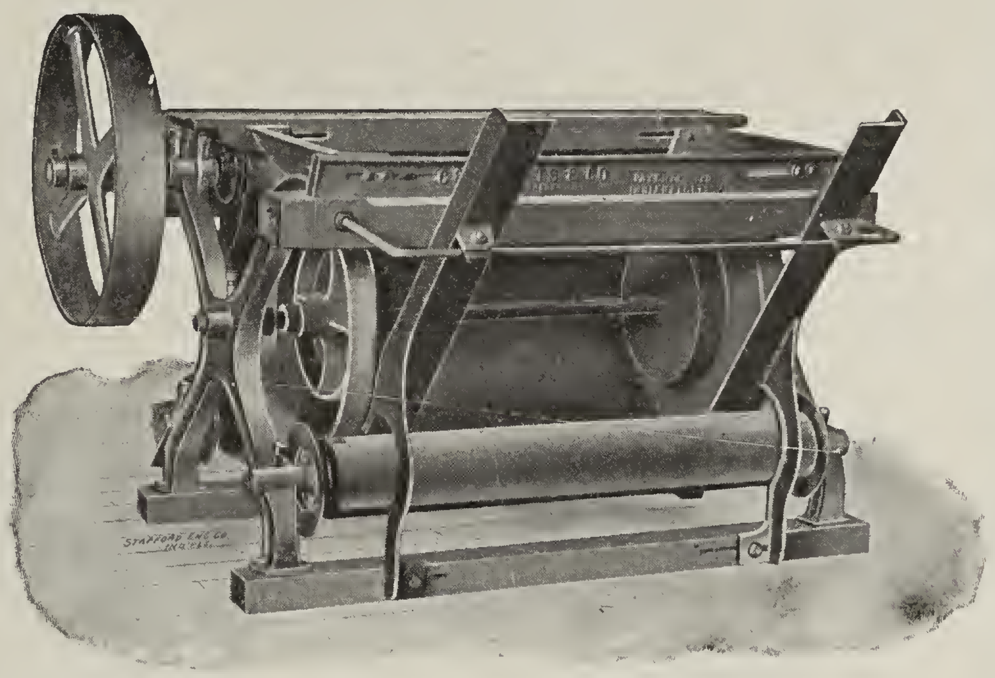
MOULD SANDERS

which have no place for the moulds to catch. No unusual wear on the moulds. No chains, sprockets or gears to wear and break.

Does not waste or spill the sand.

Sands the moulds perfectly.

Every machine guaranteed and shipped subject to trial.



We manufacture a complete line of Clayworking Machinery, Granulators or Feeders, Winding Drums, Clay Cars, Trucks and Barrows, a Dryer which is no experiment, and which will dry the most tender clay in from eight to ten hours.

We furnish everything from Clay Bank to Kiln, and GUARANTEE RESULTS.

C. & A. POTTS & CO.,

Mention the CLAY-WORKER

Indianapolis, Ind.

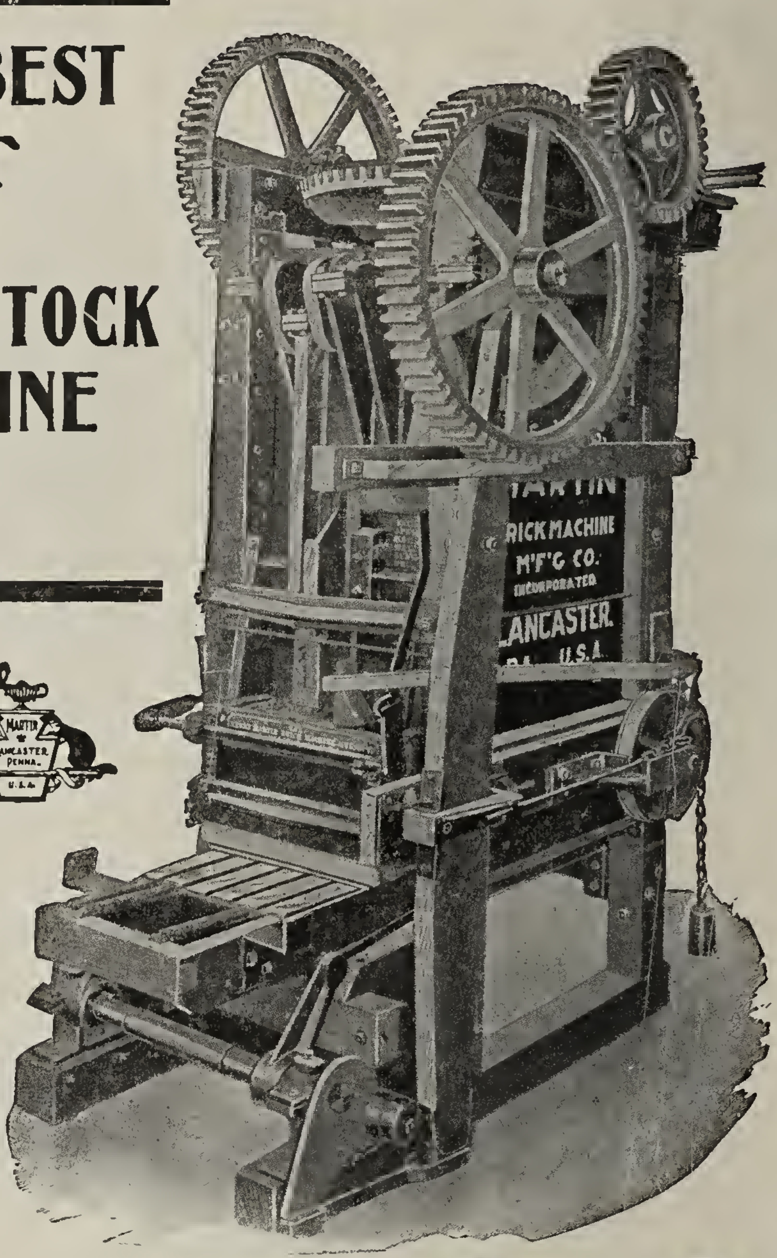
YOU!

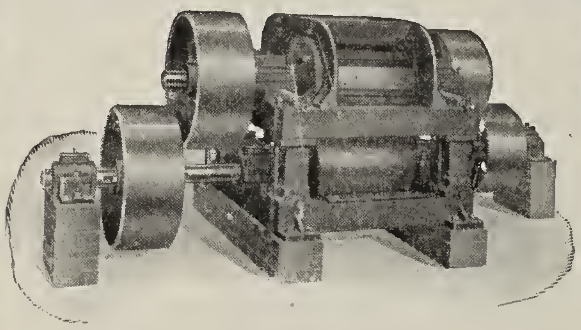
THINK IT OVER

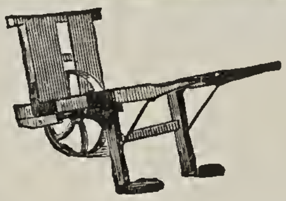
AND AT THE SAME TIME LOOK THE "MARTIN OVER"

PROVED THE BEST BY TEST

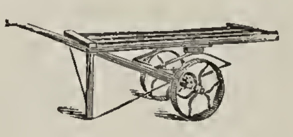
THE "MARTIN" STOCK BRICK MACHINE STYLE "A"







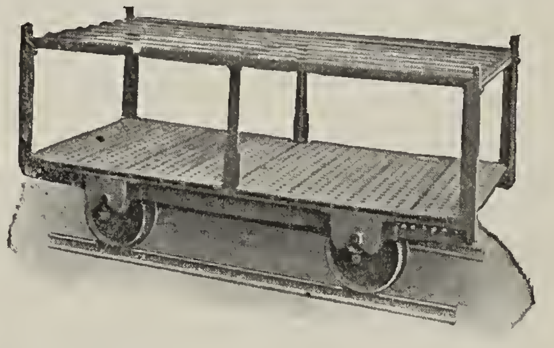
BARROWS & TRUCKS



DISINTEGRATORS = CRUSHERS = GRANULATORS

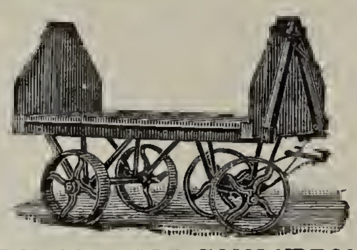
GOOD SERVICE

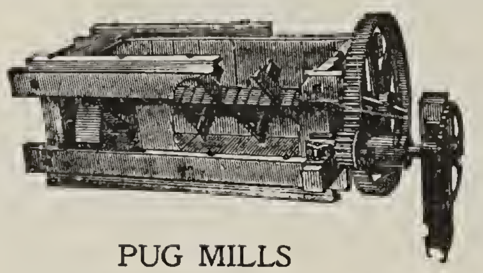
LET US FIGURE WITH U



DRYER CARS, RACK, DOUBLE OR SINGLE DECK CARS.

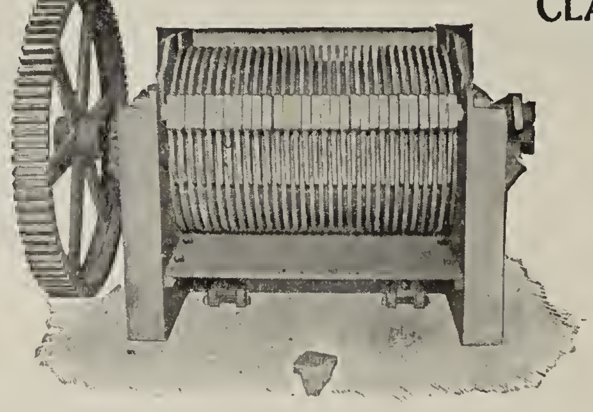
WE HAVE
THE MOST
COMPLETE
LINE OF
CLAY WORKING MACHINERY



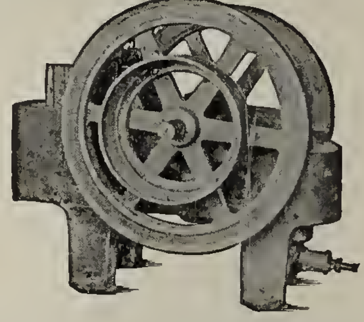


PUG MILLS

• SCREENS •



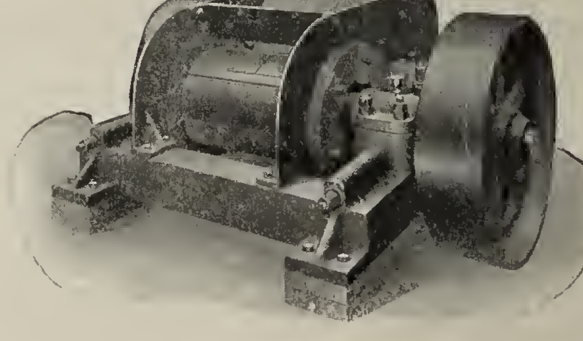
UP-TO-DATE



ROCK AND ORE CRUSHERS

WE FURNISH EVERYTHING
THE BRICKMAKER NEEDS

"MARTIN"
P. O. DRAWER 587
LANCASTER
PENNA. = U. S. A.



SAND GRINDERS & SIEVERS

TWO ROLL DISINTEGRATOR

THE "MARTIN" RACK PIPE STEAM BRICK "DRYER SYSTEM"

PATENTED February 22nd, 1898. No. 599509.
October 10th, 1905. No. 95520.
November 14th, 1905. No. 804489.

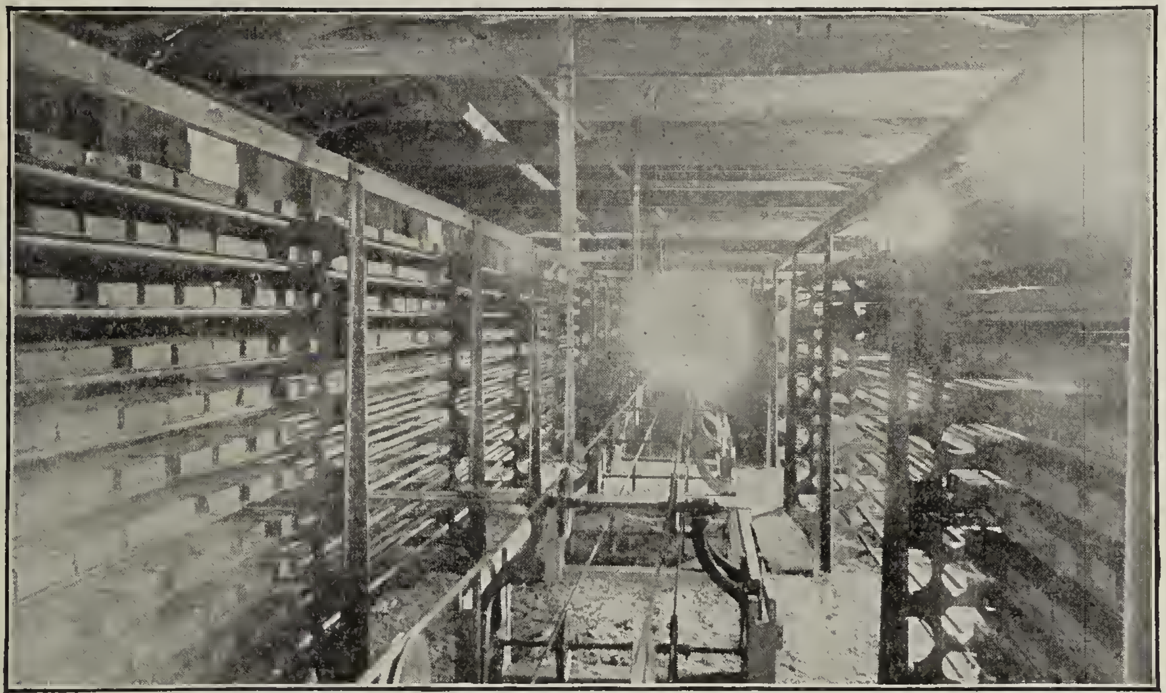
This Drier and the design in arranging it are under the protection of the United States Government by virtue of patents granted. Patents also have been taken out in the principal foreign countries. We are the sole owners and control these important patents and have authorized NO ONE to manufacture or sell the "MARTIN"

RACK PIPE STEAM BRICK DRYERS.

Brick Dried In From Six to Twelve Hours.

Building Practically Fire-Proof.

Labor Saving Throughout. Good Results.



No Fans
No Blowers
No Tunnels
No Cars

All Iron And Steel Construction Excepting Roof.

Can We Dry Your Brick—Write Us Today.

ADAPTED FOR SOFT MUD OR STIFF MUD BRICK.

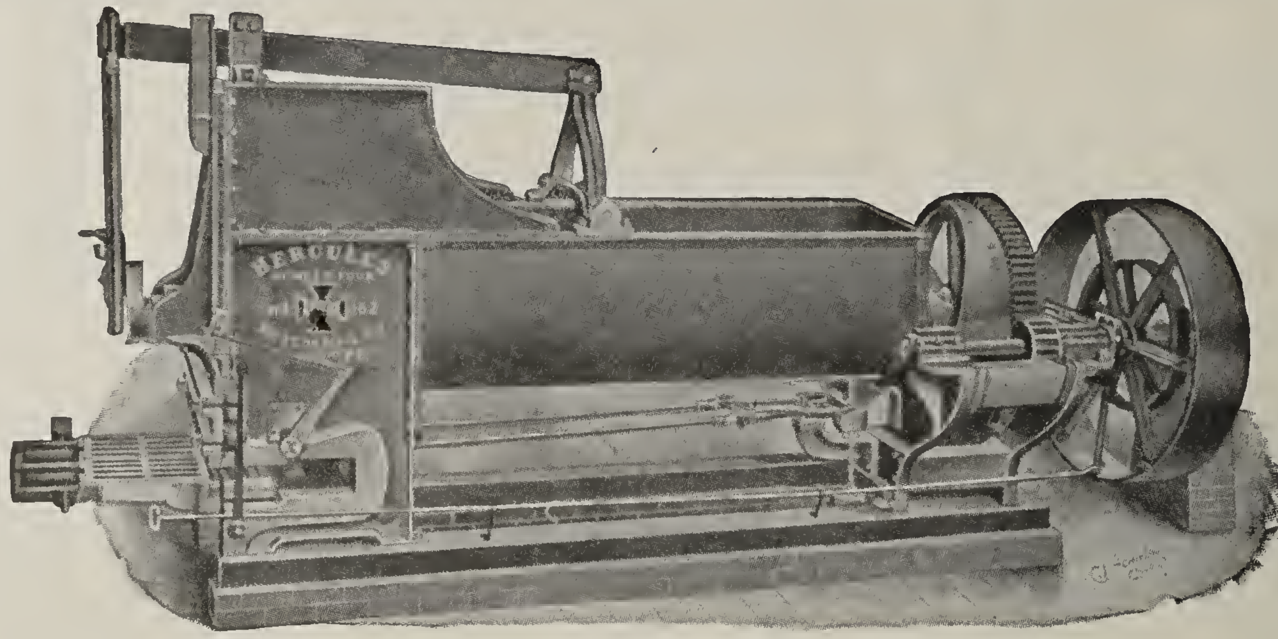
Superior in Every Respect to Any Other System—Labor-Saving Throughout—Dispenses With Truckers and Car Pushers—Pallets Automatically Returned to Brick Machine—Quick to Install and Low in Price and Takes Up Very Little Yard Room.

The Sale and the Construction of the "MARTIN" Rack Pipe Steam Brick Dryer is Under the Direct Supervision of the Factory Office at Lancaster, Pa.

For further information address

The Henry Martin Brick Machine Mfg. Co., Inc.
LANCASTER, PA., U. S. A.

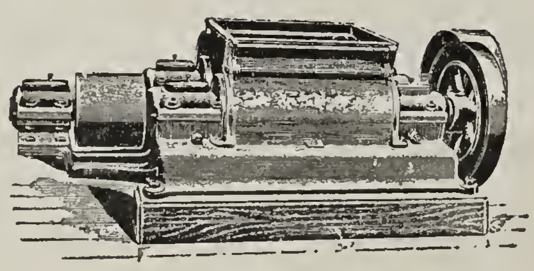
Do Not Miss This Opportunity.



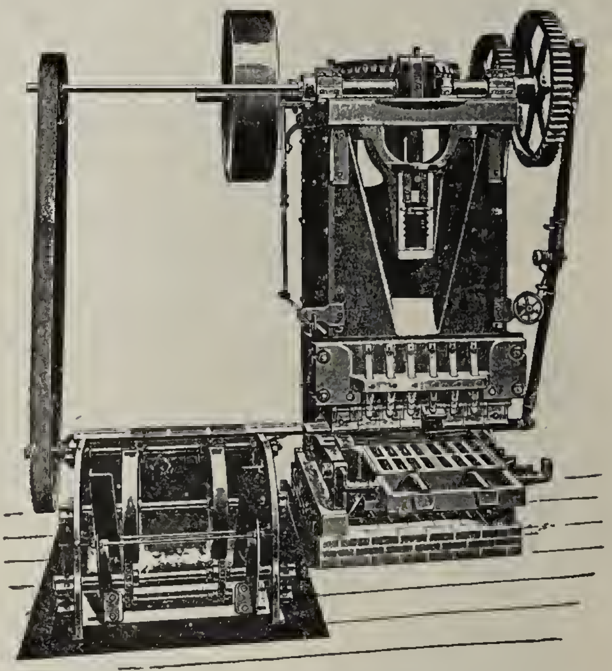
Hercules No. 4 Brick Machine.

Let Us Have Your Inquiries Today.

Ideal Horse Power.

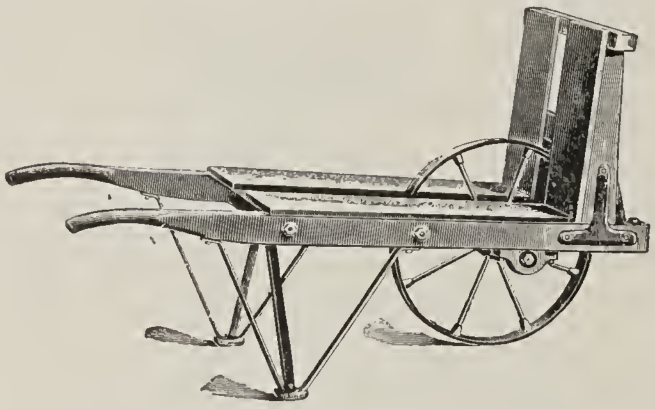


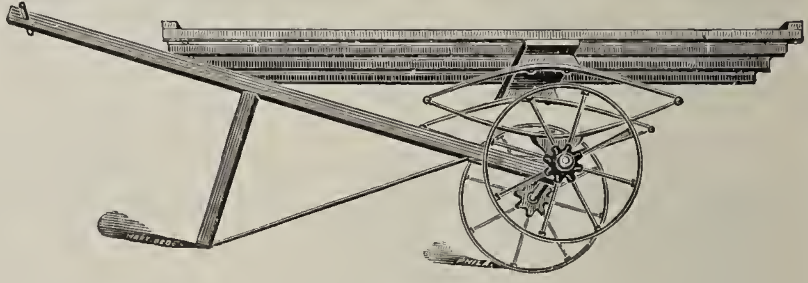
Disintegrator.



Ideal Steam Power and Sander.

OUR LINE OF TRUCKS AND BARROWS IS COMPLETE.





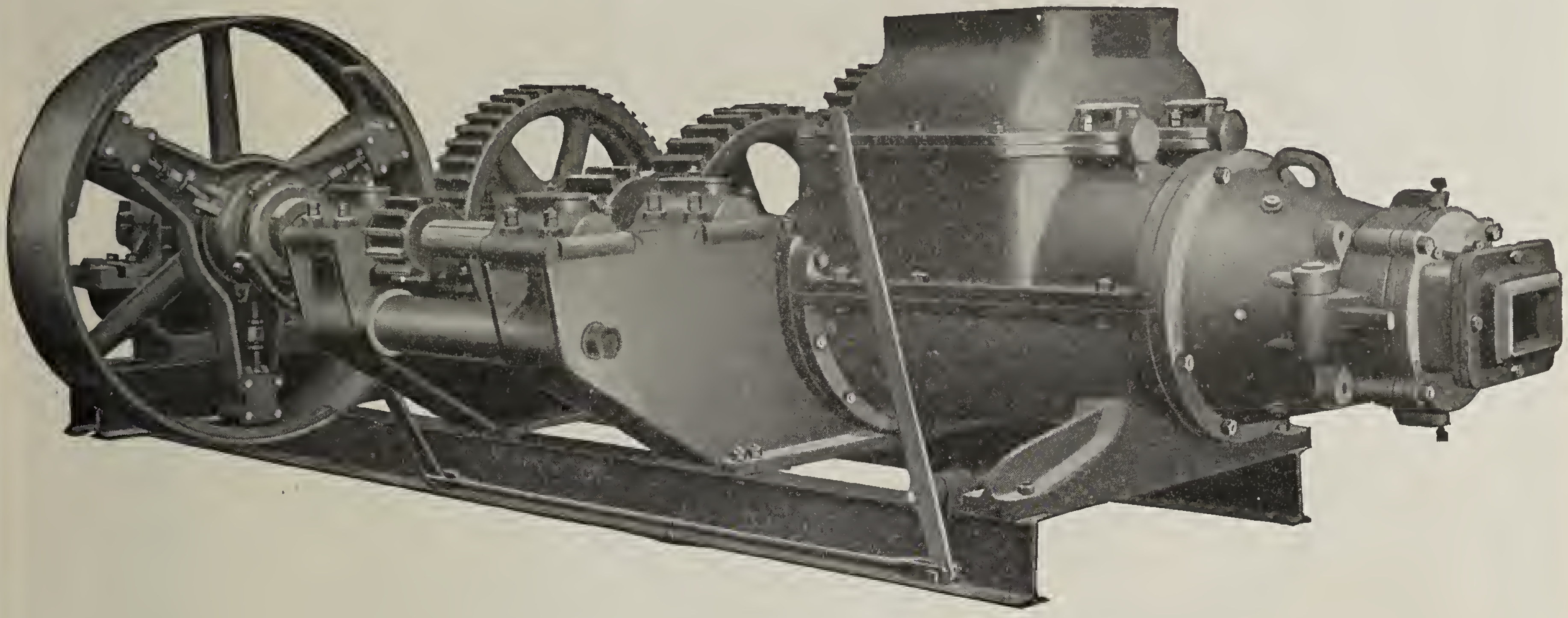
Every Supply Needed by a Brickmaker. Molds a Specialty.

The Horton Manufacturing Co., Painesville, Ohio.

See Ad of Dryer Cars on a Preceding Page.

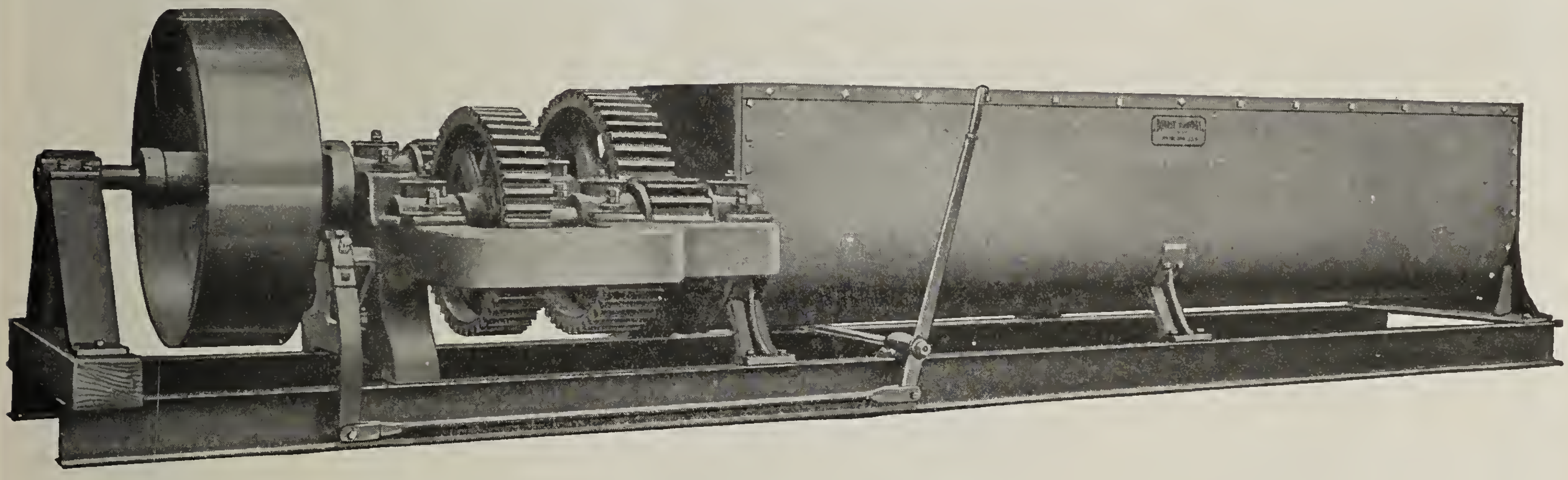
Modern Brick Machinery

BUILT FOR SERVICE.



No. 9 Auger Brick Machine.

Fifty thousand to seventy-five thousand brick per day. Steel gearing throughout, and all wearing parts easily accessible.



Pug Mill "C."

12′ x 30″ double gear, strongly built throughout, wide face gears and large shafts. Any knife replaced without disturbing others. Write for Circular No. 10, describing these machines.

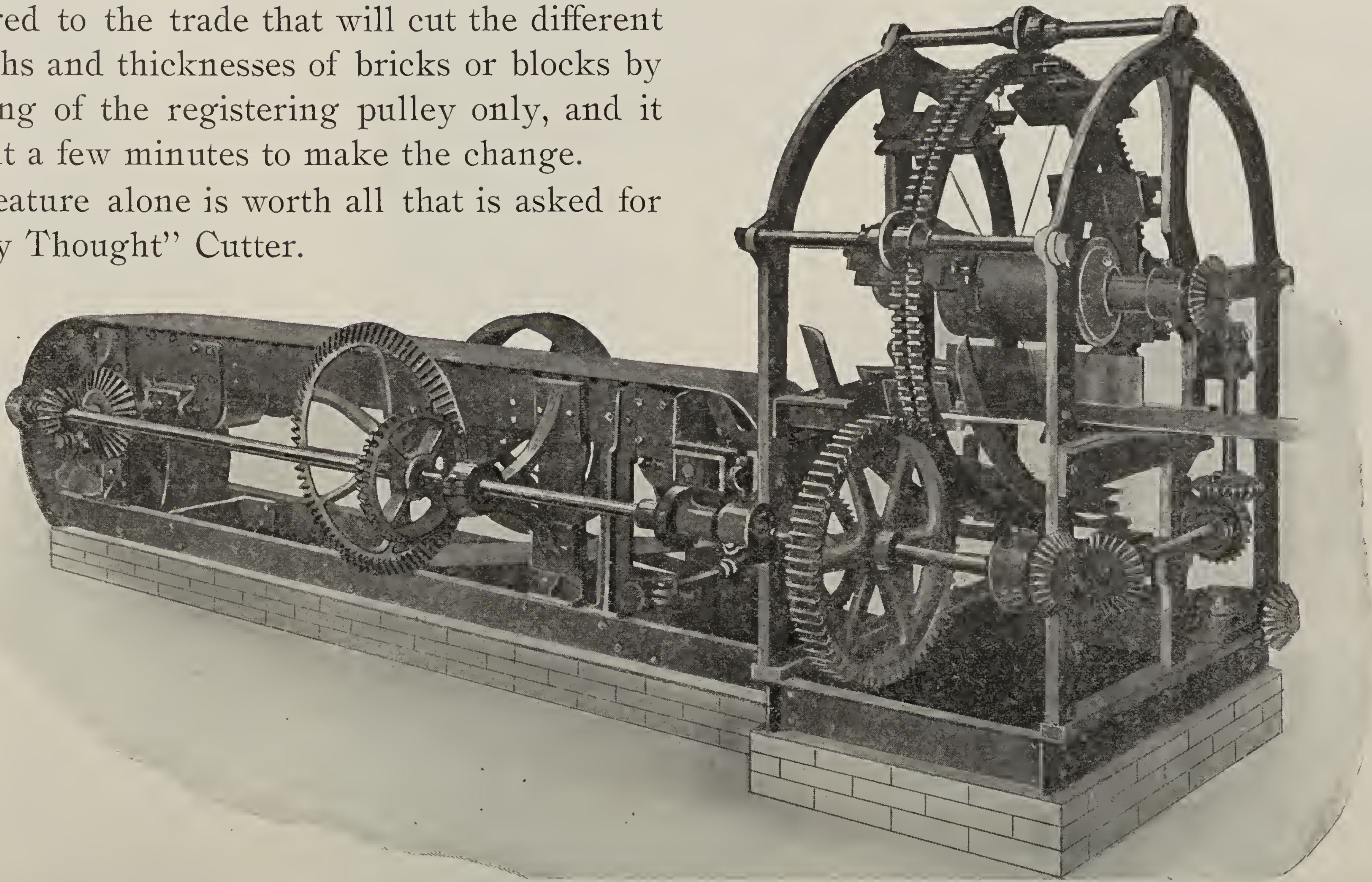
THE BONNOT COMPANY,

Canton, Ohio, U. S. A.

To Lessen Your TROUBLES Use Our PIANO WIRE SCREEN.

WHY waste time in using different cutters when you desire to change from brick to blocks or from end to side cut brick and vice versa when the Hix "Happy Thought" Automatic Cutter will cut side cut brick, end cut brick, hollow blocks or conduits any length or size desired? This is the only cutter offered to the trade that will cut the different sizes, lengths and thicknesses of bricks or blocks by the changing of the registering pulley only, and it requires but a few minutes to make the change.

This feature alone is worth all that is asked for the "Happy Thought" Cutter.

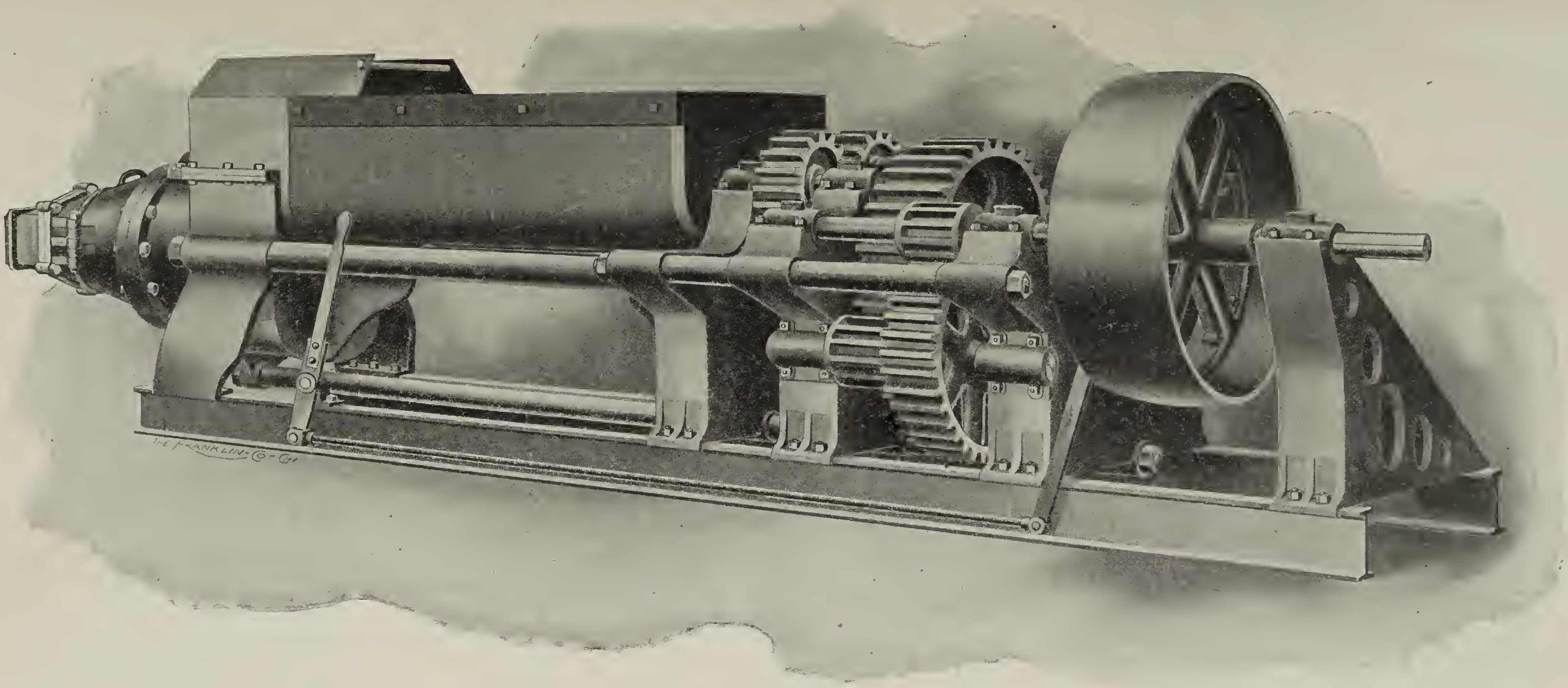


THE HIX "HAPPY THOUGHT" AUTOMATIC SIDE CUT BRICK CUTTER.

THE WALLACE MFG. CO., Frankfort, Ind., U.S.A.

Mention The Clay-Worker.

The Largest and Heaviest Combined Brick Machine in the World


THE FRANKLIN CO. CHI.

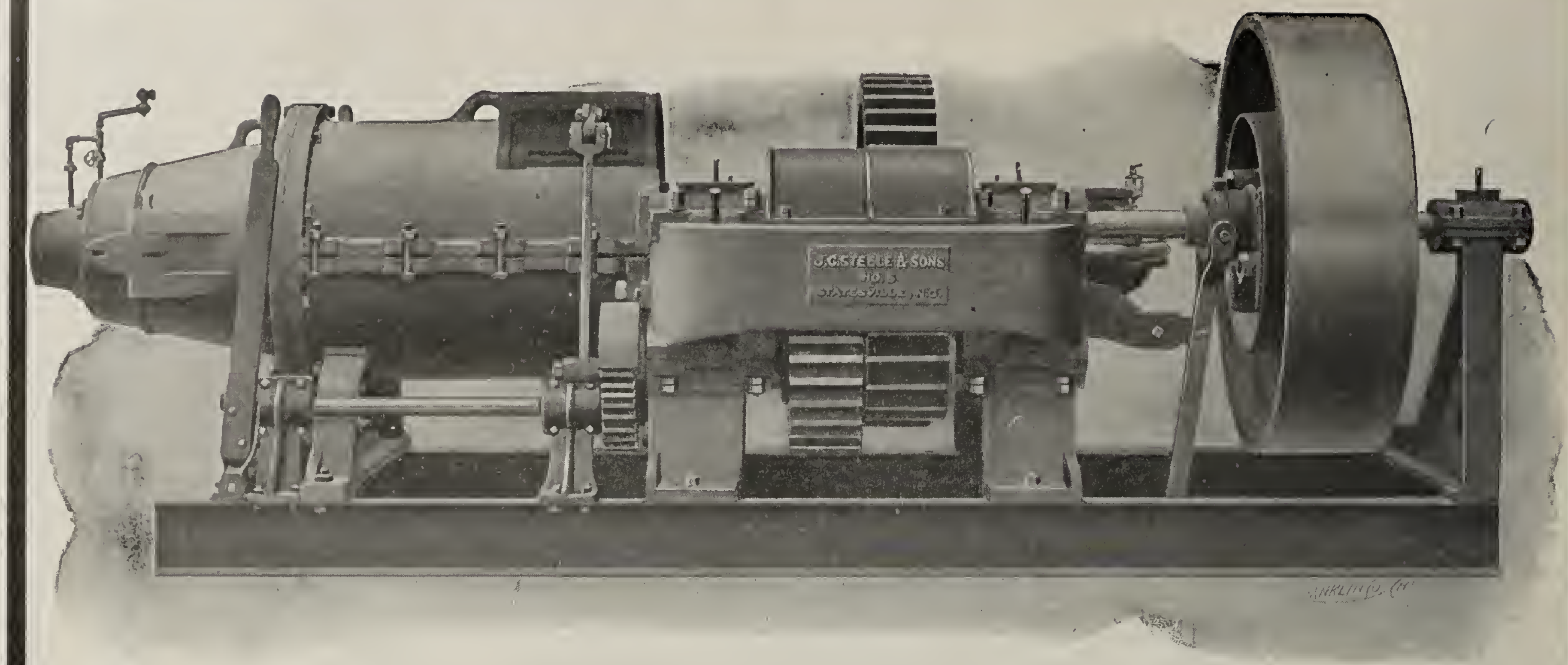
FATE'S "SPECIAL" COMBINED.

Length over all 25 ft. Height 6 ft. 6 in. Width 6 ft. 4 in. Width of pug shell 42 in. Length 10 ft. Main auger shaft 6 in. in diameter. Intermediate shaft 4½ in. Countershaft 3½ in. Main gear wheel 12 in. face. Intermediate and pug gears 8½ in. face. Pulley 48 in. in diameter and 16 in. face. Weight 30,000 lbs. Capacity 100,000 to 150,000 brick per day. Especially designed for factories desiring a very large, strong machine of great capacity.

The interior and end views are shown on opposite page, which will give you an idea of the construction.

For more particulars write

THE J. D. FATE CO., Plymouth, Richland County, Ohio.



No. 5. CAPACITY 50,000 to 100,000 PER DAY.

Built by people who have had 15 years experience with the great variety of Southern clays. Guaranteed the equal of any machine on the market.

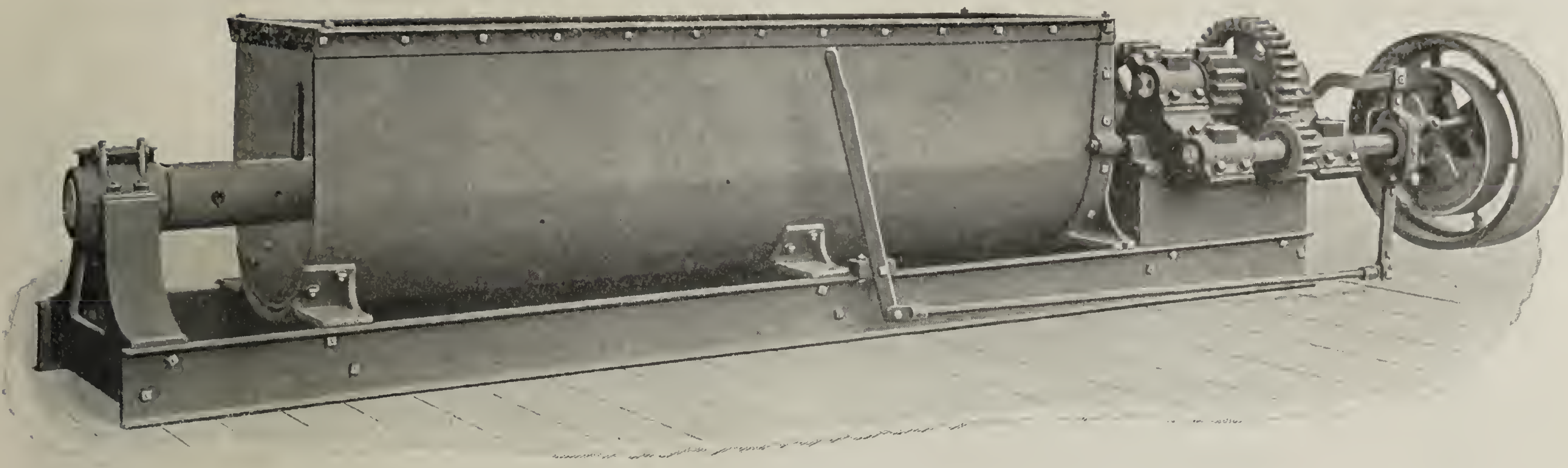
Wetumpka, Ala., Dec. 19, 1905.

Gentlemen:—After using your machinery for some years, which included the Nos. 3 and 4 Brick Machines, I have just given you an order for a No. 5 Brick Machine and Cutter, Pug Mill, Disintegrator and Winding Drum for my new yard, which will be installed in a city where I shall have to compete with other machinery of recognized merit and well established reputations. This action should be more convincing to the inquirer than a book full of eulogies. We welcome visitors and answer inquiries.

Yours very truly, J. M. Jenkins.

J. C. STEELE & SONS, Statesville, N. C.

Success Brick Machinery Co., Memphis, Tenn., Western Agents.



No. 45 (Pushing)

More and Better Pugging.

These mills do more and better pugging in proportion to their length than any others.

BECAUSE They are run full of clay from end to end; not full in the rear and nearly empty in front.

BECAUSE The top and front end are entirely open and more clay is exposed for tempering.

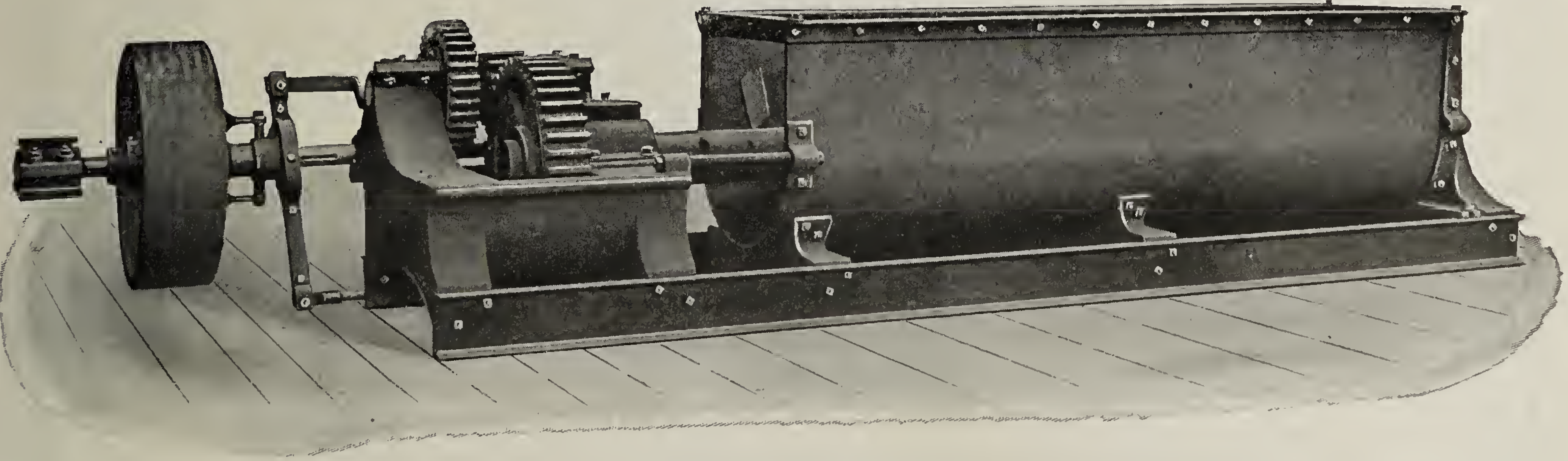
BECAUSE The pitch of each knife is independently adjustable, and can be set to discharge only the amount of clay required and at the same time keep the mill full, irrespective of speed.

They weigh 8,000 pounds each; have forged steel knives, pug shaft 8-in. diameter; marine pattern thrust, gear frame cast in one piece.

Smaller mills of the same pattern for these who want them.

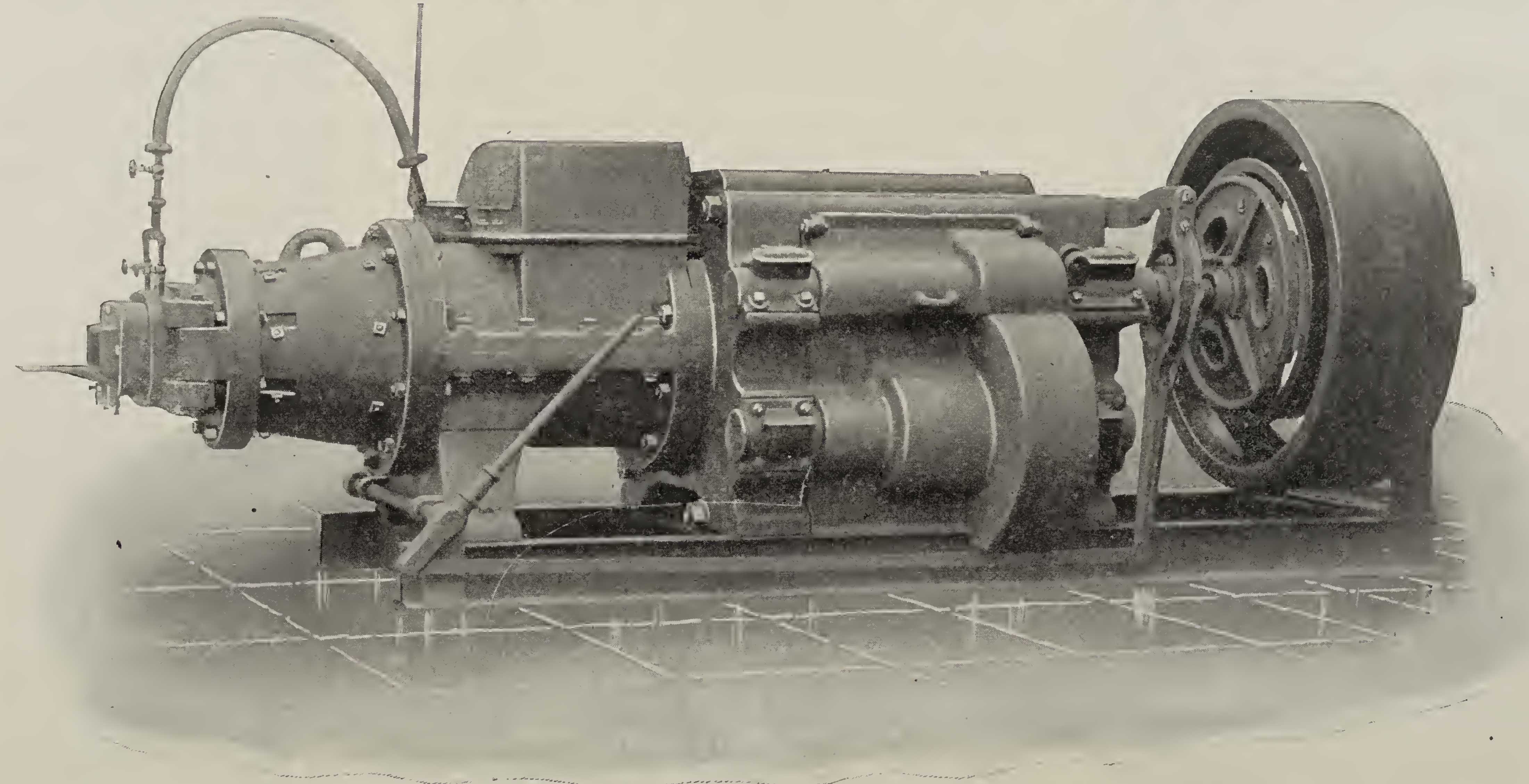
H. Brewer & CO., TECUMSEH, MICHIGAN.

Designers and Builders of Clay Working Machines.



No. 44 (Pulling)

Modern Stiff Mud Brick Machinery.



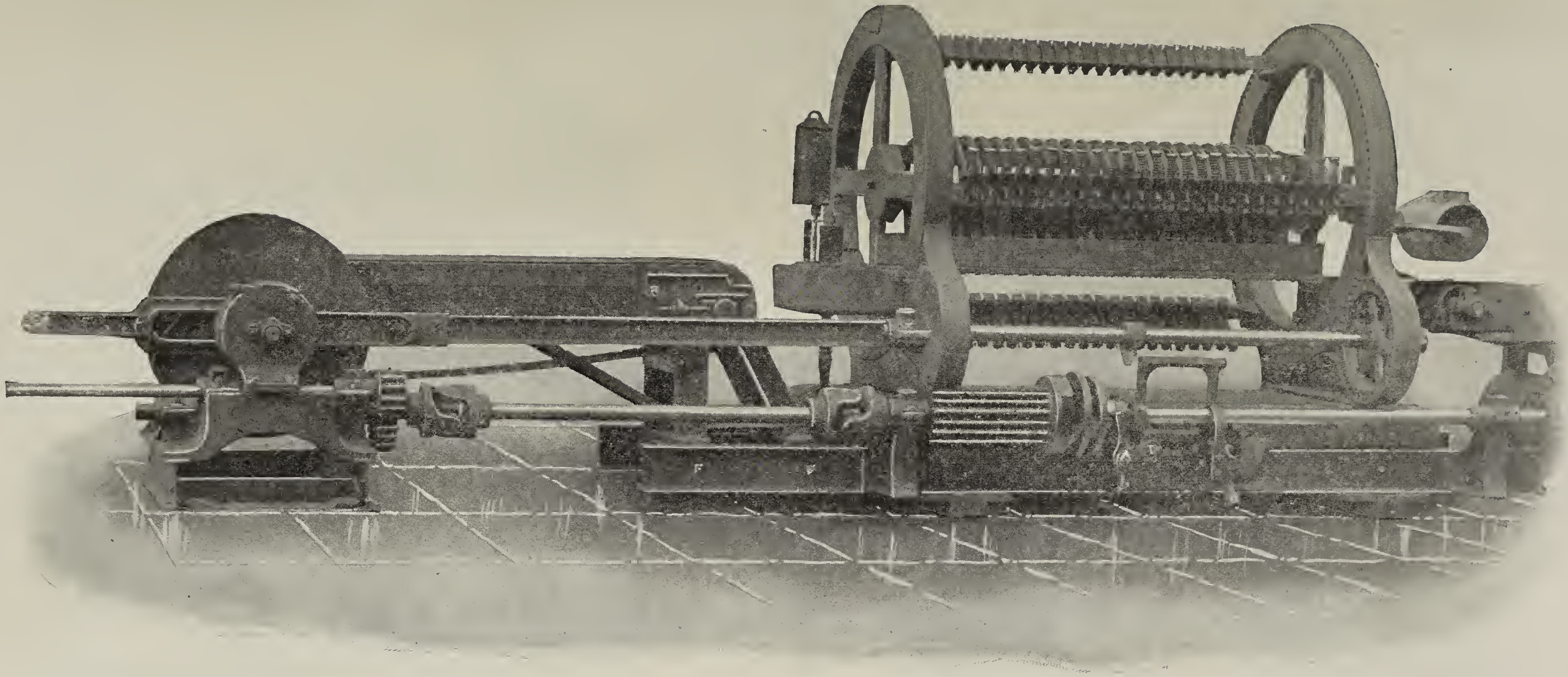
We've been building Brick Machinery a good many years and have naturally been brought into contact with a variety of clays and conditions and have been able to produce machinery more and more nearly adapted to the requirements of our customers. Our motto in this work has been "Prove all things and hold fast to that which is good." Consequently the features in our products which have not been found good have been discarded and improvements from time to time have been substituted.

Let us get acquainted with your troubles or your wants, and if we cannot do you good we will tell you so. We build Brick Machines in many sizes and patterns.

(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

An Improved Rotating Automatic Cutter.



Our Rotating Automatic Cutters are the result of many years' constant hammering at a single type of Cutter. One of the three sizes we are building will suit your Stiff Mud Brick Machine.

We ship on trial—YOU say whether our guarantee of "satisfactory operation" is fulfilled.

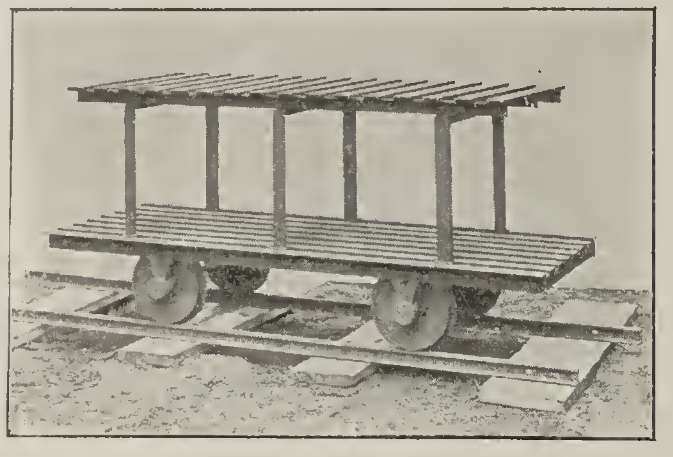
If desired a man will be sent to arrange details of installation.

These Cutters will give you satisfaction when all others have failed.

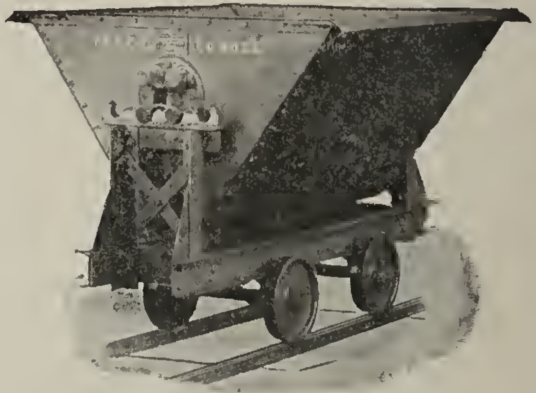
(Mention The Clay-Worker.)

E. M. FREESE & CO., Galion, Ohio.

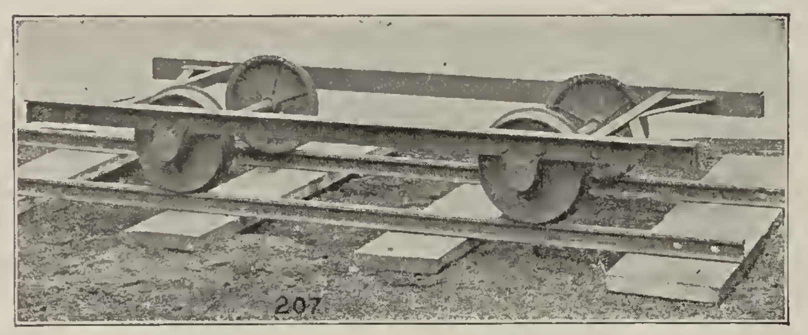
INDUSTRIAL RAILROAD EQUIPMENT.



No. 244.
DOUBLE DECK DRYER CAR,
STEEL DECKS.



No. 52,
TRUNION DUMP CAR.
FOR GENERAL USE.



No. 207. SOFT MUD FLAT CAR FOR FOOT PALLETS.

The Cleveland Car Co.,

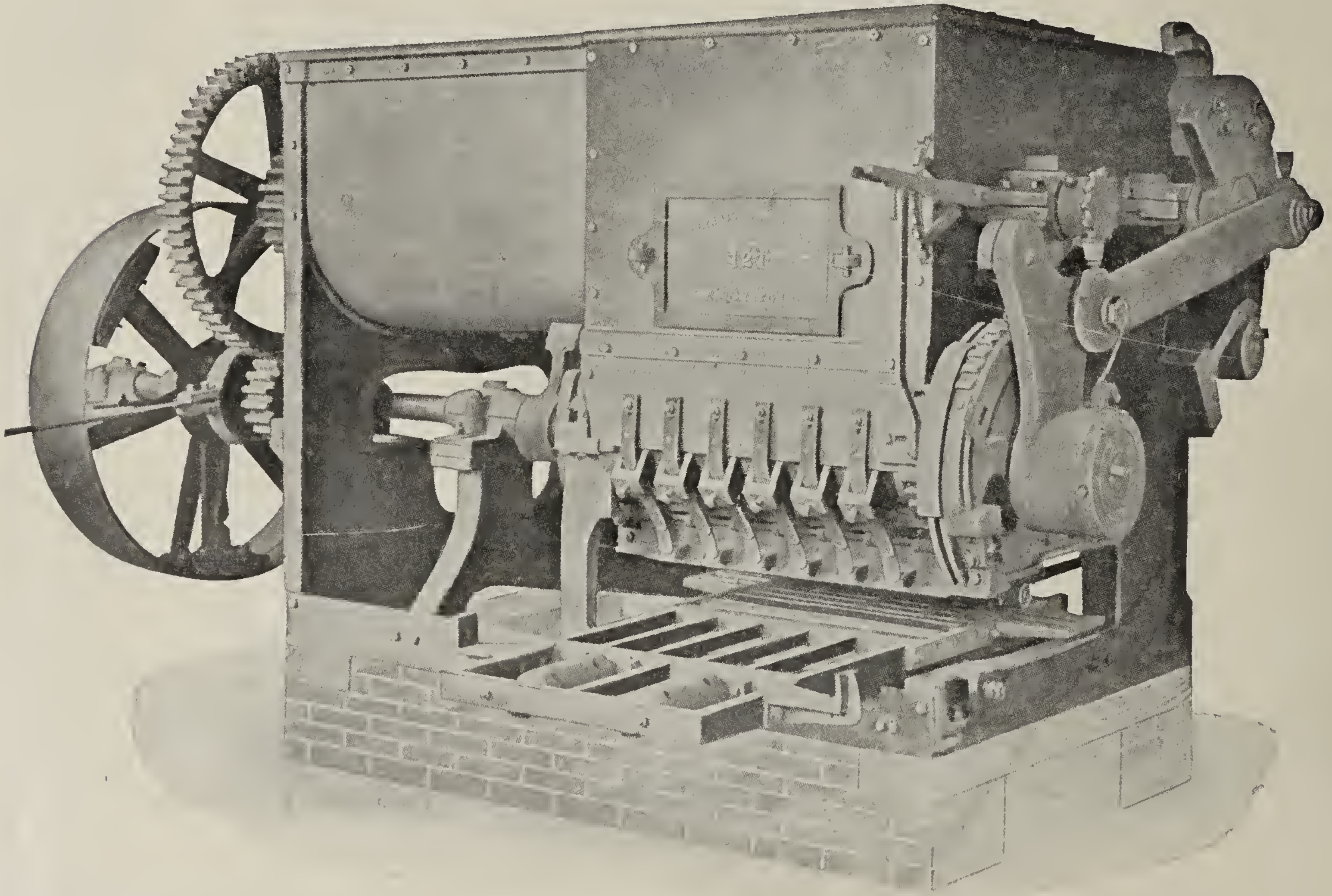
West Park, Ohio.

Builders of Light Steel Cars of Every Description,

Switches, Turntables,
Portable Track Crossings,
Steel Pallets, Rail, Etc.

The Monarch Brick Machine

Used in Fourteen Foreign Countries



and is recognized in all as the leading brick machine for simplicity, strength and durability. It is the only machine that has double pug mills. It is also a leader for quantity and quality of brick.

1906 Catalogue mailed free on application.

James W. Hensley, Successor to S. K. FLETCHER & CO., **Indianapolis, Ind.**

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